GRAPEGROWING • WINEMAKING • MARKETING
SEPTEMBER / OCTOBER 1992

PRACTICAL WINERY & VINEYARD

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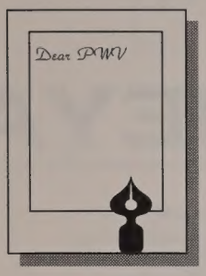

✍ **Dear *PWV***

Just a short note to compliment Don Henfling on his excellent article on sulfites (***PWV***-May/June'92). It is the best single review that I have come across. I particularly appreciate the summary he made of health effects of sulfites.

This article would be excellent for consumer and trade education. I hope many ***PWV***-subscribers will duplicate the article and give ***PWV*** credit for publishing it.

Sincerely,
Jim Lapsley, Program Specialist
UC Davis Extension

✍ **Dear *PWV*:**

Your readers have come to know us over the years by the initials 'SWK'. During that time, you have come to depend upon us for the finest in filtration materials and responsive, effective service.

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✍ **Dear *PWV*:**

On behalf of the wineries featured in the May/June 1992-***PWV*** as well as the Ohio wine industry at large, thank you very much for the great coverage about our winery/restaurant program.

As the Ohio wine industry matures, we are excited to watch the commitment to the pairing of wine and food, not only in these wineries that feature restaurants, but also at the other wineries that offer many special wine and food activities.

You might be interested in knowing that your feature solicited a great number of requests for additional information from not only Ohioans but from across the country.

Thank you very much for your support. We appreciate your interest.

Sincerely,
Donniella Winchell,
Executive Director
Ohio Wine Producers Association

✍ **Dear *PWV*:**

Integrity in Farming

Even though I spend most of my time making wine for Fetzer Vineyards, I have a real love for grape growing and working in our small family vineyard located next to my home. We have about five acres of vineyard with three varieties that we, as all farmers, think are some of the best grapes in California. It was about three years ago that we established an organic approach to growing grapes.

As you may know, Fetzer Vineyards has been growing hundreds of acres of grapes organically for more than five years. At Fetzer, we feel strongly that this approach to farming is not only a gift to ourselves and our children, but a contribution to our community.

A milestone in the history of wine was achieved in November, 1991, when a segment on the highly popular television show, "60 Minutes," broadcast a message to the world that wine can be a welcome addition to a balanced and healthy life-style. I am proud to be a member of the wine community, and feel that because of our industry's commitment to improving quality we have achieved recognition with our wines on the tables of the world.

We are an industry of integrity. Integrity in the quality of our product. Integrity in our code of advertising and responsibility to the consumer. Now we have the opportunity to be world leaders in the farming of grapes as we are in the making of wine. How can we, in good conscience, spray chemicals on our vineyard one day and then talk to consumers about the healthful benefits of wine?

We are so fortunate to have the climate and soil conditions that exist in California. We can grow grapes cleaner, richer, and with more flavor than so many other states and countries. We also have the tools to farm organically. We have the ability to support predator insects, to manage our pests, and we have many inexpensive and sensible systems for managing weeds. With theses tools and our innovative spirit, growing organically is a natural transition.

My vision for the future is that in the next five years, 100% of the grapes grown in California will be naturally farmed. And by the year 2000, all the grapes worldwide will be grown organically.

Let us, the farmers, take responsibility for these changes. We cannot rely on government to make these changes.

As industry leaders, let's build a future for our children that we can be proud of. The future is now.

Paul Dolan, President
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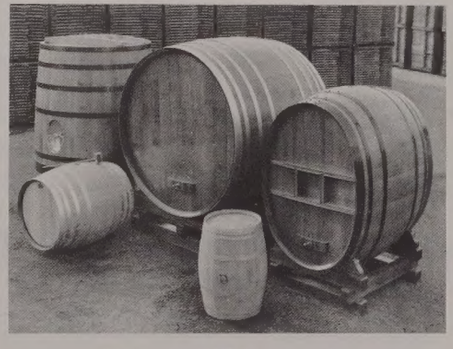

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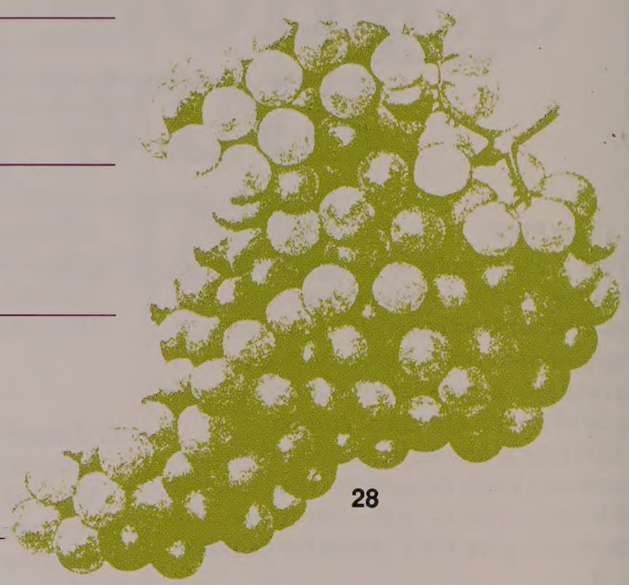

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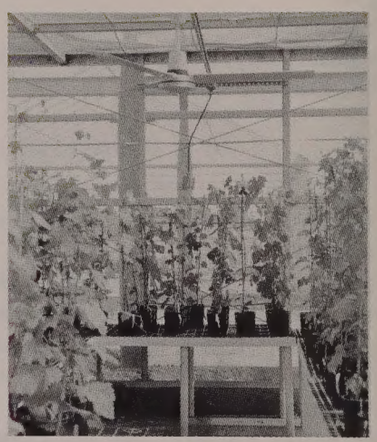

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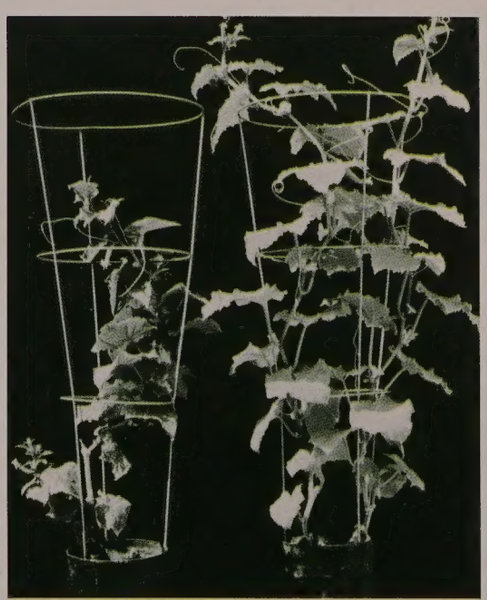

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COVER: Riesling on its own roots in Elder loam, gravelly sub-stratum soil in the Greenfield, CA vineyard owned by J. Lohr Winery. PHOTO BY: Aryle Grensted

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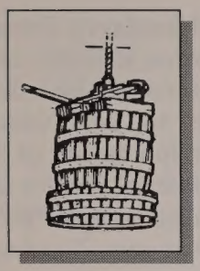


Winegrowing research funding in crisis

Support for wine research is collapsing, according to industry experts. As one researcher puts it, "It's shocking how bad it has gotten ... the infrastructure that supports viticultural and enological research is crumbling."

Recent, severe funding crises have mixed with a complex, long-fermenting brew of politics, bureaucracy, and factionalism to create a potion deadly to research. The result has been huge cuts in the wine research programs conducted at universities — the research programs so essential to the wine industry.

According to Phil Freese, Robert Mondavi Winery's Vice President, Winegrowing, "The fat went away two years ago, the lean went away last year, and now we're talking about the skeleton."

Wine research funding traditionally has come from three levels: federal, state, and grants/donations. Monies from all three sources have been constricted, in varying degrees.

One example is the USDA-ARS (U.S. Dept. of Agriculture - Agricultural Research Service) grape virology program conducted by Dr. Deborah Golino, Research Plant Pathologist, located at the University of California, Davis. Dr. Golino has been working on grape virus and virus-like diseases for five years.

However, the above program lacks adequate funds to maintain research activities at the level of wine industry needs and, in particular, to expand research efforts to address newly recognized latent virus problems which are the results of the phylloxera replanting boom in wine-grape growing areas throughout California.

California's notorious budget crisis, which has caused massive spending cuts and personnel layoffs, has directly impacted wine research. In 1991, the Viticulture & Enology Dept. at UC Davis sustained two base budget cuts of 5% each, resulting in layoffs of three staff research associates. This loss was in addition to the retirement of three faculty members and an extension enologist. Since 1989 and including an anticipated cut of 10% in 1992-93, the Viticulture & Enology Dept. has suffered a 50% reduction in operating budget.

At California State University, Fresno, seven positions have been cut in the agricultural laboratory, and three tenured faculty in the Plant Sciences Dept. have been laid off.

"Big cuts in the California Agricultural Technology Institute (CATI) Information Services are going to have a dramatic impact on the way we disseminate information to the industry," says R. Keith Striegler, CSU Fresno research scientist. "We're not going to be able to do everything we did in the past. We'll be a very different university."

Without adequate research staff, only those commodities with organized political clout and a willingness to supply industry money will win the remaining researchers' time. At this point, wine would lose out to such well-organized and funded crops as strawberries and walnuts.

"The problems are complicated," says Dr. James Wolpert, UC Davis Viticulture Extension Specialist. "They are going to take a lot of money and a long time to solve, but we must convince growers that the battle is worth fighting. When the next phylloxera or white fly hits and people call the university and get an answering machine, they'll understand what they're dealing with.

"The industry has to let the legislature know that the work we do is important; emphasize how good it is for the state. Winegrape funding organizations are going to have to be more creative about how they get money. The way other states have done it — assessing tax on wine that's sold — would solve our problem in the blink of an eye."

Industry experts agree that, compared to the value of the crop, funding for grape and wine research is sadly lacking. The U.S. trails far behind other countries in equitably funding such research. "To survive," Striegler says, "research programs will require more partnerships with industry. It's in all our best interests."

American Vineyard Foundation

The American Vineyard Foundation (AVF), a non-profit industry fundraising organization, has been successful in its goal of alleviating some of the research

Consumers fund research through 'Rootstock'

The first annual Rootstock wine/food/music festival was held Aug. 2 at the Silverado Country Club in Napa, CA. Net proceeds were donated to phylloxera research at UC Davis. "We're going directly to consumers for research funding," says Michael Martini, Rootstock organizer.

Ten thousand people were demographically targeted and invited to attend at a cost of $75.00 each. Rootstock raised over $30,000. Aimed at the Woodstock generation, the festival also was known as 'Vine Aid' because it borrowed tactics from such benefits as Live Aid and Farm Aid.

Martini, winemaker for Louis Martini Winery and lead guitarist in the rock band 'Private Reserve', organized the event with fellow winemakers who also are rock musicians. Forty wineries participated in the festival, and wine industry suppliers donated $1,000 each. Organizers asked those who couldn't attend the event to contribute the price of a bottle of California's best wine ($15.00 to $30.00). Martini hopes proceeds also will provide seed money for next year's festival.

At press time, Martini and organizers were still finalizing plans for a 'consumer club' to expand Rootstock's reach. Their goal is to attract over 200,000 people within five years. For approximately $15.00/year, club members would receive a newsletter focusing on "hot issues for consumers, such as sulfites, etc.," Martini says. Special trips, to such destinations as Australia, also may be offered to members.

For more information or to contribute, contact Rootstock, P.O. Box 786, Calistoga, CA 94515-0786 or call 916/757-8692 or 916/752-1946. ■

funding crisis. AVF originally was begun by the American Society for Enology & Viticulture (ASEV) as a clearinghouse to collect and disperse funds, but fizzled out when the official marketing order was discontinued.

Today, AVF is an all-volunteer group, headed by Justin Meyer (winegrower for Silver Oak Cellars), devoted to vineyard research. Initially, California's Wine Commission gave the group $100,000 to disperse for research, barely a drop in the bucket. During the next couple of years, Meyer convinced them to donate up to $600,000 annually. With the demise of the Commission two years ago, AVF was forced to scrape up money on its own.

In 1991, AVF raised $260,000 through a fundraising program in which wineries matched growers' contributions. But that amount was "just a subsistence level," Meyer says. "It just kept research alive." In 1992, they've raised $520,000 for research, and aim to gather $1 million in 1993. "In our time, we've funded $3 million with zero administrative costs," Meyer notes.

"They're doing a great job," Striegler says. "We appreciate all the support from AVF — we couldn't do it without them." ARS scientist Golino agrees: "AVF's fundraising has kept key research alive. Justin has done a great job. The AVF is filling a niche left by the Wine Commission."

But Meyer and AVF's 30-person board can't continue doing the work alone. And, given the current state-level politics and program cuts through severely slashed state budgets in university research, "Just when we've got the funds, we're not sure we'll have a place to put them," Meyer says. "We've got some real problems with the administration at UC Davis. The chancellor doesn't want agriculture, and the dean [of agriculture] is his puppet."

"The 'skeleton' is the research structure," adds Phil Freese, "faculty, research associates, graduate students, labs, vineyards, greenhouses, and equipment. Research dollars must have the skeleton such that the programs come to life."

"We don't want to send our money to the Pomology Dept. or to the Chemical Engineering Dept. We're tempted to go to UC Davis [administration] and say 'If you're not funding ag, then give up your land grant status.'

"The UC Davis administration must make it clear they're following the mandate of the legislature to have enology and viticulture on campus. Then we can get the industry to fund research and instruction."

"We have some of the best minds in the world working on viticulture and enology at Davis," says James Lapsley, of UC Davis' Agriculture Extension Program. "We also have some of the worst infrastructure. We had already fallen behind [financially] before the budget cuts. As a result of the layoffs of staff researchers during the past two years, all the younger minds with advanced instrument training are gone.

"Ag is being targeted for cuts which will affect viticulture and enology. The industry needs to pull together to change that. If it is not reversed, the bright minds will be leaving."

"When the next phylloxera or white fly hits and people call the university and get an answering machine, they'll understand what they're dealing with."

What can be done?

As a way to unify the wine industry around research fundraising, AVF has proposed forming a statewide 'research only' commission. This commission would collect donations of $1,000 from each winery or back a voted-in assessment. Funds would be used for research only, as the commission's name implies. But wine-industry factionalism so far has obstructed that idea.

"We'd like to see a statewide funding mechanism, like a commission," Striegler says, "but it will be very difficult to enact until fractionalization in the industry is rectified."

"There is an increasing reliance now in the industry on using internal people for enology and viticulture research so that it is proprietary," Wolpert says. "But the main competition comes from across the ocean — Italy, Spain, Chile — not a grapegrowing neighbor down the road."

One wine roots-level fundraising approach, 'Rootstock,' has targeted consumers with a festival and club (see sidebar).

"We need to stimulate the state's economy, and put pressure on legislators," says Mondavi's Freese. Freese, with other wine industry officials, was responsible for securing federal support and funds for the new National Grapevine Importation facility of the Foundation Plant Material Service at UC Davis (see report in this issue of ***PWV***). "We need to get more money flowing so that it flows to the universities; specifically to agriculture programs, and specifically to viticulture," Freese adds.

"We need to build strong support with wine-related industries," Lapsley suggests. "For example, the tourist, retail, and hospitality trades that rely on the wine business. Such widespread support would forcefully show the UC administration the importance of funding viticulture."

"We need to support AVF," Freese says. "If money flows through them consistently to the university viticulture programs, then researchers can show administrators and legislators that they have a strong commitment of the industry to research and stable funds to **assist** in funding."

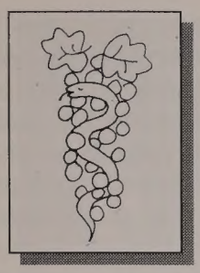
Such stabililty will generate more research work, according to one viticulture researcher. Support of AVF also demonstrates that the industry thinks such research is important and should continue.

Experts agree that the wine and grapegrowing industry must overcome factionalism and unite in the political action arena. It can model other successful ag commodities in order to gain allocations of state and federal funds for grape-related issues.

"When you bomb Pearl Harbor, people know about it," Freese says. "When you bomb a university, it is a silent event. People need to know wine is being assaulted." ■

CORRECTION

The July/August 1992-***PWV*** (page 15), reported that Matanzas Creek Winery, in California, was going to bottle over 12,000 cases of 1991 Chardonnay with Cellukorks™. However, considerations of print quality and weight consistency, have caused the winery to wait on a commitment to Cellukorks™, according to Susan Reed, co-winemaker.



Does alcohol make people chubby?

Let me have men around me
that are fat,
Sleek-headed men, and such as
sleep a-nights,
— Julius Caesar

Wine critics often praise Chardonnays as 'fat' and 'buttery', but few winemakers would wish to have the same adjectives applied to their personal physiques. Beer commercials often focus on selected bulbous and bouncing body parts, but the camera rarely zooms in on the notorious beer belly.

Medical science now has clearly established ethanol's favorable influence upon HDL cholesterol as one of the primary reasons for diminished rates of heart disease among moderate drinkers. But could alcohol have other effects upon lipid (fat) metabolism that might lead to less desirable outcomes?

A recent study in the ***New England Journal of Medicine*** (Suter et al, April 9, 1992) suggests alcohol consumption may be a risk factor for obesity.

Healthy people degrade ethanol in a step-wise enzymatic sequence, deriving seven calories of energy per gram of ethanol as it progresses to the end-products of carbon dioxide and water. A five-ounce glass of wine (approximately 150-ml with 12% alcohol content) yields about 125 calories of energy.

The moderate drinker consumes about 10% of daily calories in the form of alcohol. (The alcoholic may ingest 50% of daily calories from alcohol.)

This energy can be used for heat, muscular action, internal organ functions, and for the synthesis of bodily substances, including fat. Adapting to our changing environment and physiological stresses, the body's discretionary control of energy is one of the marvels of life.

Hormones can certainly affect or direct energy use, including growth hormone, thyroid hormone, adrenal hormones, insulin, and even sex hormones. Some drugs and dietary substances, including alcohol, also may influence energy use.

In the study cited above, Swiss researchers Paolo Suter, MD, and colleagues from the University of Lausanne, Switzerland, sequestered eight healthy volunteers in a chamber. The scientists equipped the chamber to measure the body's metabolism of fat, protein, and carbohydrate by analyzing expired gases. The subjects were given a controlled diet with and without alcohol and then monitored for two days.

The study showed that after alcohol was added to the diet, the subjects oxidized (broke down) less fat. The effect was considerable — a 31% to 36% reduction in fat oxidation. The effect was limited to the daytime hours, when alcohol was in the subjects' bloodstream. Protein and carbohydrate metabolism was not altered.

The alcohol also increased the subjects' overall energy expenditures. The au-

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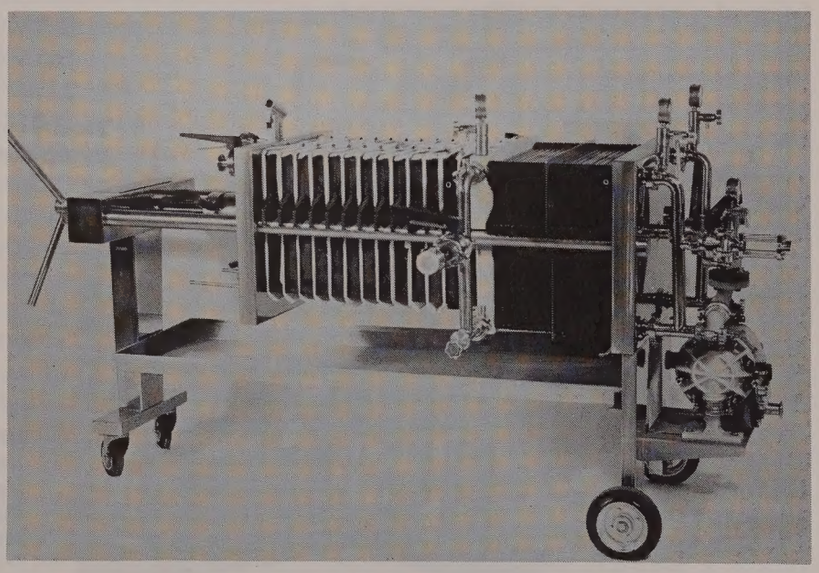

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thors' methods were not able to determine whether any of the alcohol calories were shunted directly to fat deposition.

The authors concluded that alcohol consumption in excess of energy needs might selectively favor the accumulation of fat. They also noted that obese people who wish to maintain or lose weight, without abandoning drinking, should decrease their dietary fat intake.

This study shows some particular strengths and weaknesses, not all of which appeared in the lay press coverage.

Strengths of Swiss study

The Swiss subjects were healthy, non-alcoholic volunteers. Many earlier medical studies describing alcohol's metabolic effects have, in fact, been performed upon alcoholic patients and are questionably applicable to the general population.

The study used actual measured alcohol consumption rather than relying upon reports or making generalizations about 'customary consumption.'

The alcohol was given with meals. The study looked at alcohol's effects when given as a partial substitute for food calories as well as when given additionally, beyond dietary intake.

Weaknesses of Swiss study

The Swiss volunteers were given an average of 96 grams of alcohol per day, divided between breakfast, lunch, and dinner. This is the amount of alcohol contained in more than a full bottle of wine, or eight ounces of 80-proof spirits. The researchers calculated the dose to be 25% of the subjects' energy requirements. This quantity of alcohol can hardly qualify as 'moderate' consumption.

The alcohol was given as grain alcohol diluted with tap water and juice. This technique would not detect some of the possible differences between beverage types. In particular, some phenolic components of wine clearly have been shown to affect cholesterol metabolism.

Eight men is a very small sample. Two days is too short an interval to look at weight gain or change in body fat composition. At least one epidemiological study (outside the laboratory) has shown no increase in weight in drinking versus non-drinking twins.

Conclusions

Understanding the diverse metabolic actions of alcohol may help elucidate the mechanisms by which moderate consumers attain their longevity advantage over abstainers and heavy drinkers.

Suter's study establishes that large amounts of grain alcohol over a short time, coupled with a sedentary level of activity and an artificially restricted environment, may lead to fat accumulation in Swiss males.

What does this study say to the civilized wine drinker? If we eat more than we need to support our daily activity, and if we drink and never leave the cellar, we'll gain weight as fat.

We need to exercise regularly to maintain muscle tone, boost HDL, reduce stress, and feel better. If we don't, and particularly if alcohol is used as a substitute stress-reducer, we'll probably gain weight as fat. We must remember that people naturally gain weight, largely as fat, as they age — about 10 pounds per decade.

Moderate alcohol intake, in conjunction with a Mediterranean-style diet and sensible activity, statistically affords one a longer life. In that case, there will be more time to eat, drink, and be merry — and grow rounder. ■

Yond Cassius has a lean
and hungry look;
He thinks too much;
Such men are dangerous.
— Julius Caesar I:2

Dr. Shoemaker is a lean pediatrician and hungry winemaker. He has contributed several chapters to the recently published book on wine and health, **The French Paradox and Beyond**.

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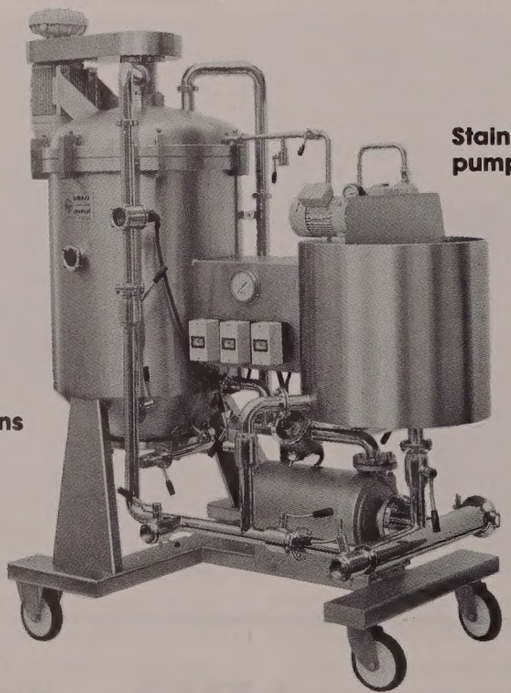
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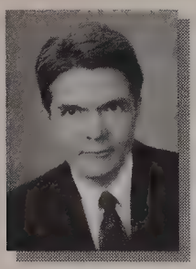

Businesses operate in a complex environment, influenced by numerous factors, including intermittent interventions by the courts and legislatures.

Two recent U.S. Supreme Court decisions have potential for significant change in the legal environment of wineries. One is an aftershock of the 1980 Midcal decision, which knocked out consumer price posting in California and called price-posting laws into question everywhere. The other pretty well squelches use of the infamous Government Warning as a broad shield against suits by consumers who allege they were not adequately warned of the hazards of drinking.

Yet more uncertainty about price posting

The normal term for business persons who agree that they will keep each other informed of their selling prices and not change them for 30 days is 'felon.'

Arrangements restricting the frequency or rapidity of price changes are contrary to antitrust law. It occurs for certain products in certain states because the state governments say it is mandated by law. Federal antitrust law has long recognized that the sovereign activities of states are exempt from antitrust liability.

Exemption is pretty clear if a monopoly state says that all its stores will sell at the same price. It is available, but only conditionally, where private individuals restrict competition by complying with anticompetitive laws. The conditions, sometimes known as the Midcal test, are that the state have articulated a clear and affirmative policy to allow the anti-competitive conduct and that the state provide active supervision of anticompetitive conduct by private citizens.

There has been litigation before on how clearly the legislature must speak and how actively the liquor administrators must supervise. In June 1992 the U.S. Supreme Court spoke to the second point, with implications for wineries and wholesalers who must comply with state laws restricting freedom to make a deal.

The case arose out of an administrative proceeding brought by the Federal Trade Commission against several title insurance companies to prevent further use of some rating bureaus that set fees for services. The charge was that, by complying with rating bureau price determinations, as provided by the laws of four states, the insurers had conspired to fix prices in violation of the FTC Act.

The insurance rates arrangement was a little different from wine price posting, in that the state licensed a trade organization to come up with uniform prices for title searching and examining, and to post them with the state insurance regulatory agency. Posted prices would become mandatory if not rejected by the regulators within a specified time.

To a lawyer, the immediate enquiry is whether the facts can be meaningfully distinguished from those found in the wine industry, so as to reduce the force of the case as precedent. Possible distinctions include:

- Insertion of a trade association (versus individual industry member filing).
- Uniformity of price (versus restriction on change of individually determined prices).
- 'Normality' of insurance as a product (versus traditional deference to state policies regulating liquor).
- Failure, in some cases, of the insurance regulators to follow their own regulations, which would have required more active scrutiny of the posted prices.

The main problem with distinguishing the case on the factual differences is that the opinion is broadly worded and based on underlying policies of great moment. Avoidance of price fixing, the court said, is a "national policy of such a pervasive and fundamental character" as to be "essential to economic freedom."

In response to an argument that liquor justifies broader latitude for state regulation, one might quote the majority opinion: "[S]tate-action immunity is disfavored ... By adhering in most cases to fundamental and accepted assumptions about the benefits of competition within the framework of the antitrust laws, we increase the States' regulatory flexibility."

Indeed, the opinion is replete with aphorisms raising the hurdle for anticompetitive legislation: "Immunity is conferred out of respect for ongoing regulation by the State, not out of respect for the economics of price restraint." State schemes are invalid where "there is real danger [a private party] is acting to further his own interests, rather than the governmental interests of the State."

Limiting competition is justified only if the state has "exercised sufficient independent judgment and control so that the details of the ... prices have been established as a product of deliberate state intervention, not simply by agreement among private parties." It is not sufficient to have merely a "basic level of activity directed towards seeing that the private actors carry out the state's policy."

Of practical significance is the fact that private treble damage actions under the antitrust laws had induced the insurance companies to abandon use of rating bureaus before the FTC acted to restrain the practice. While one would not expect the government to prosecute criminally an industry member for good faith compliance with price-posting laws, even invalid ones, plaintiffs seeking money are another story. There is no established defense of good faith reliance on an illegal state regulation in treble damages litigation.

An obvious risk is that a consumer might allege that he or she paid $0.50 more for a bottle of wine than would have been charged in a non-posting situation. The suit could be brought on behalf of every consumer in the state for purchases over the past four years. Assuming the economic evidence was there, the result likely would be determined by whether the posting system adequately invoked the state action exemption.

As Justice O'Connor pointed out in her dissenting opinion, antitrust liability of an industry member compelled by state law to participate in an anti-competitive pricing system may turn on "how enthusiastically a state official carried out his or her statutory duties."

Is posting prices for your wines now a source of increased liability exposure for lack of active state supervision? I'd suggest a conference with your legal advisor on that question.

The American paradox

It seems paradoxical that a product that is by all responsible accounts a worthy component of a healthy diet should be the object of government-sponsored propaganda classifying it with harmful drugs.

Previous columns have alluded to the tension between the natural desire to fight back in the arena of public opinion and the desire of product liability defense lawyers that clients say nothing positive about their

products to the consumer. There is a definite trade-off between meeting the market threat of neo-Prohibitionism and reducing potential liability to consumers who claim to have been harmed by the product. Wineries and lawyers disagree among themselves about where the balance should be drawn.

One course of action, dubbed 'the tobacco road' because it is modeled on the long-successful stonewall tactics of tobacco industry defense lawyers, is to say nothing whatever about the wine/health nexus except what is mandated by the Alcoholic Beverage Labelling Act of 1988 ("ABLA"), the infamous 'Government Warning.'

The other is to weigh the legal risks of increased exposure to liability from saying good things about wine against the market risks of remaining silent in the face of virulent attacks against wine as part of 'the alcohol industry,' a process that has led some wineries to mount health-related counterattacks on neo-Prohibitionism.

The ABLA speaks of a comprehensive national standard for reminding consumers of health hazards and specifically prevents states from requiring any other warning. Although no one was relying on it, there was hope that producers' use of the Government Warning might shield them from state court liability, at least for failure to say anything more on the bottle about product hazards, and possibly even for failure to warn in advertising and promotion. The hope was based on the theory that the federal law would 'preempt' (*i.e.* invalidate) state laws dealing with the same subject matter.

The June 1992 decision of the U.S. Supreme Court in the *Cipollone* case, interpreting the Cigarette Labeling Act ('CLA'), dealt a significant blow to those hopes. The opinion of the court underscores the civil liability risks inherent in speaking out on the positive health aspects of table wine.

Let's start with a brief look at what the ABLA says on the issue. Section 216 deals specifically with preemption of state law by federal law and declares that no statement other than the federal Government Warning may be "required under State law."

The term 'State law' includes statutes and "principles having the force of law." Thus, both legislative and judicial sources of warning requirements appear to be preempted.

A state law directly requiring wineries to put another warning statement on the product would be expressly preempted, and hence would be invalid under the Supremacy Clause. By extension, one might logically conclude that a state law requiring another warning in order to avert liability to persons inadequately reminded by the Government Warning would also be invalid. However, there are arguments for preserving the power of consumers to sue under state law:

> First, there is no specific preemption of the right to sue.
>
> Moreover, legislative history reveals disagreement between the principal sponsors of the bill in the House over whether the Government Warning would be only a floor, not a safe harbor.
>
> Finally, some judges have said that only a direct, clear statement for preemption in a federal statue could invalidate state laws that impose different requirements by indirect means, such as liability to consumers.

Does that mean that someone claiming

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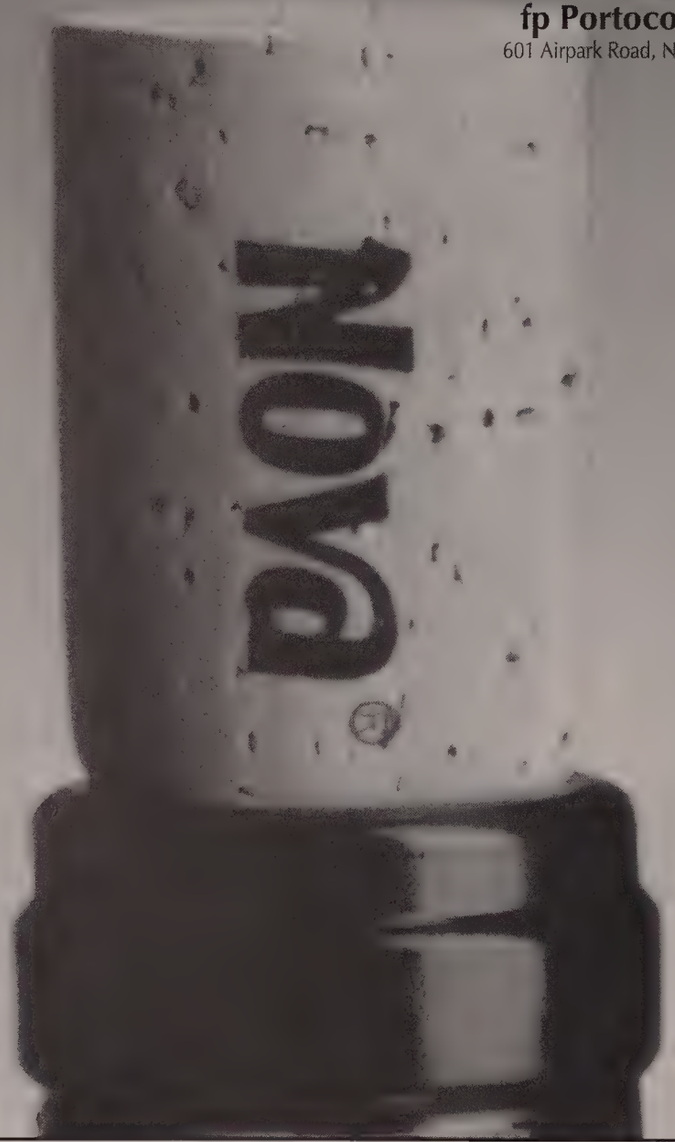

to be harmed by your wine could successfully sue in state court on the theory that you did not add a stronger warning to the Government Warning? The answer in *Cipollone* was yes for cigarettes, but we still don't know if the result would be the same under the ABLA.

To the extent that a lawsuit rests on the proposition that the winery should have put an additional or clearer warning on the container, it still may be preempted by the federal statute. The uncertainty arises from the fact that the CLA preemption provision had no express reference to state common law, while the ABLA appears to include common law by definition.

What about the argument that state suits are impliedly preempted by the broad statement of purpose in the ABLA calling for national uniformity in 'reminding' of hazards? Unfortunately, seven justices of the Supreme Court in *Cipollone* agreed that the issue of preemption is governed entirely by the section so entitled. As the plurality of four justices put it, 'in this case' the other provisions of the statute "offer no cause to look beyond" the section captioned "Preemption."

There may be a faint hope that the Court would consider the ABLA a different case, since the CLA statement of purpose refers to national uniformity of 'regulations,' while the ABLA employs the broader term, 'requirements.' I doubt it.

Without implied preemption by the statement of purpose, there doesn't seem a prayer that the Government Warning will offer any protection in the areas of advertising and promotion. Moreover, it seems all but certain that things said in advertising and promotion can counteract whatever protection the Government Warning may offer.

What are we doing to 'remind' the consumers of the dangers of alcohol? Although enumerated as two, in fact three hazards appear in the Government Warning:

- the risk of birth defects from consumption during pregnancy,
- the risk of injury from impaired ability to operate machinery, and
- the risk of experiencing unspecified 'health problems.'

It therefore may be argued that whatever preemptive force the ABLA may have will protect wineries against liability based on failure to warn any of three categories of plaintiffs:

- those whose claims are for chemical injury to a fetus,
- those who were injured by impaired control of an automobile or other machine,
- those who have incurred health problems allegedly related to alcohol consumption.

It is not difficult to imagine a state court deciding that any of the warnings, particularly "may cause health problems," is weak and easily overridden by advertising and promotion. It is true that many courts have said that the dangers of alcohol are common knowledge about which a manufacturer has no common-law duty to warn. But consider the following statement from a beer liability case:

"If a jury finds that [the brewer's] marketing of its product has effectively taught the consuming public that consumption of beer on the order of eight to twelve cans of beer per week can be a part of the 'good life,' and is properly associated with healthy, robust activities, this conclusion would be an important consideration for the jury [even if there were a warning label

on the product]."

In summary, there may be no preemption of failure-to-warn suits at all. Even if there is, it doesn't prevent fraud arguments and related ploys based on advertising and promotion.

On one hand, the risks need to be kept in perspective. Wine has nowhere been legally classified as an inherently hazardous product. A plaintiff still ultimately has to prove it caused harm.

On the other hand, juries are unpredictable. Statements made in advertising or promoting wine could make a plaintiff's job easier on the issues of whether a duty to warn of hazards had been breached, or an implied warranty had been formed, or the effects of the product were fraudulently misrepresented.

Is it fraudulent to reprint or quote from news stories about 'the French paradox' without also discussing the J-curve and the concept of trade-offs of other risks, such as cancer? More specifically, is use of the story in public relations a promotional activity that can be presented to a jury as evidence of nullification of the Government Warning? Another one to discuss with your legal advisor. ■

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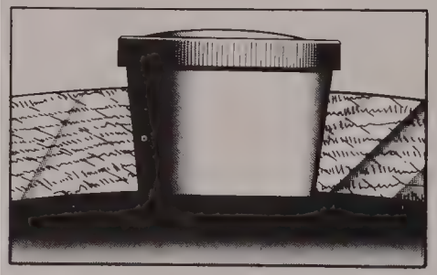

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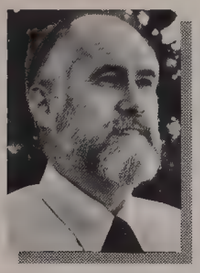

Drought departure?

Young children and domestic animals whose time scale for measuring earthly events is six years or less are in for some heady, new experiences. This was evidenced in early 1992, as the climatic and hydrologic cycle moved through its nearly unpredictable gyrations in the far-western U.S. (and elsewhere also, it seemed).

For young members of the Storm family, the wet month of February 1992 brought, for the first time, their first experience of puddles, gutters running full, plugged storm drains, thunder and lightning.

While everyone in the drought-stricken West was afraid to mention the end of the d_____for fear of upsetting the rain gods, children and dogs found the new cycle both curiously different and awesome.

My three-year-old grandson, who wore rubber boots for the first time in his life, quickly discovered that puddle-stomping and gutter-wading were events in which he excelled with very little instruction.

But it was a different story for Sally, our five-year-old English Springer Spaniel. Even with water sports firmly fixed in her genetic make-up, she found the new winter water more like distasteful periodic visits to the dog groomer. While she tolerates quite well the muzzle noise of a 12-gauge shotgun on pheasant hunting excursions, the sound of nearby thunder prompted short-term barking and running-in-circles. She did a dance to let the big-shotgun-in-the-sky know that pheasant season was over and that she did not appreciate the outdoor shower and unauthorized shooting. Sally is definitely in the minority and the end of the very dry cycle (if it is the end) is happily welcomed by all people in our part of the world. AMEN!

Groundwater and wells (Part II)

Part I of this series (**PWV**-July/August, 1992) explored several events common to all wineries dependent upon ground water and wells for water supply:

- groundwater occurrence and location of wells
- selecting a well-drilling contractor; and
- storage requirements for re-regulation of groundwater pumpage.

Part II covers additional facets of this broad field of engineering and water science.

Well monitoring

Gathering well performance data is more than just filling file cabinets with reams of paper or loading computer memory with useless facts. For a well with a large drawdown and a slow rate of recovery back to static water level,

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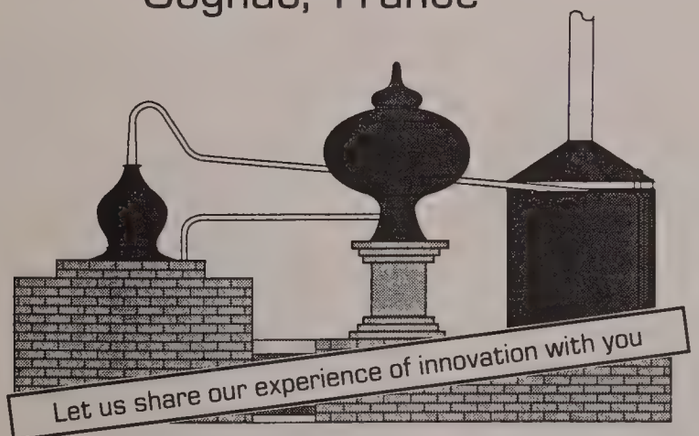

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overdrafting is always possible. This is true, particularly when the long-term trend in the groundwater basin's water levels is down.

For the individual well, overdrafting can adversely affect the pump impellers (turbine-type pump with electric motor at the surface as idealized in Fig. 1) or submersible pump (both motor and impellers in the well casing). It can leave the pump dry, which means no water for the winery. It also presents a serious overheating threat and eventually can destroy the pump and motor.

For a modest investment, a device called a 'pump saver' can be installed to serve as a first line of protection for the well pump. It will de-energize the well pump motor when:

- low water levels prevail;
- over- or under-voltage surges or sags occur; and
- single-phasing occurs (loss of one or more phases at electric generation source or at utility's substation).

Almost all industrial service electric motors have factory-installed overload and high-temperature disconnects (heat strips). These will deactivate motors for either electrical or mechanical malfunctions. Augmenting the capabilities of the disconnects, the pump saver consists of a small programmable computer, relays, and recorder light panel. Besides its preventive function, it also displays **which** malfunction occurred, so that proper corrective action can be taken.

The potability or safety of ground water supplies, once determined and certified by local public health officials, seldom deteriorates. Extended droughts, however, can and will alter chemical quality.

Dissolved salts are created continually in a groundwater basin, as subsurface waters mineralize through contact with underlying geologic formations. Subnormal precipitation does not significantly recharge groundwater basins, and therefore the salt is not adequately diluted.

The slightly mineralized rainfall or snowmelt that enters basin recharge areas helps maintain a desirable salinity balance. Bacteriological contamination is unlikely with properly constructed wells. Intact surface seals can prevent entry of contaminated surface water to the inside of the well casing.

Wineries should be alert for the growth of iron bacteria in groundwater supplies that have a ferrous iron content of

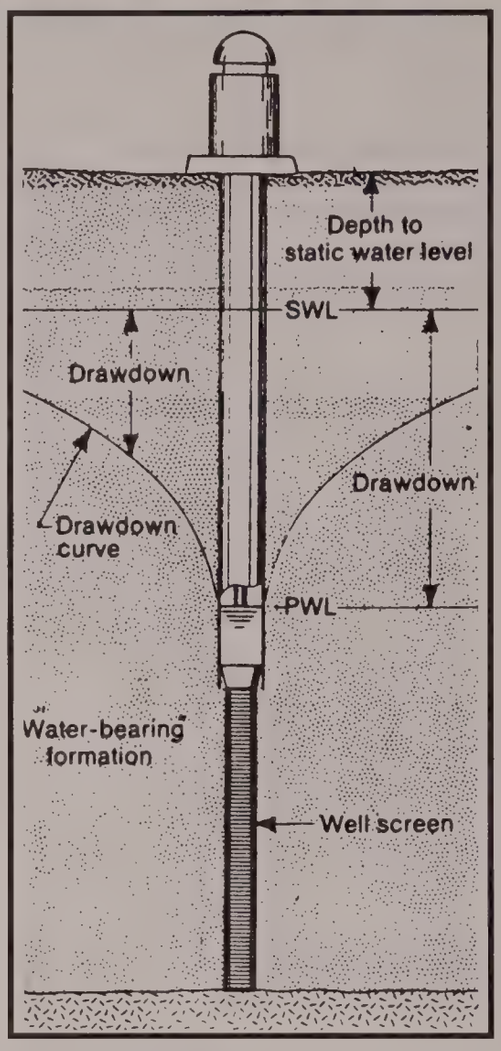

Fig. 1 Water level relationships in an idealized well.

0.5 mg/L or greater.[1] This troublesome but benign microbe lives happily on pipes and storage tank walls. It may appear as orange stain on plumbing fixtures. One way to effectively and permanently solve the problem is to flush the system and initiate a dissolved iron removal program (green sand filter or chlorination).

Undesirable wine contamination from high dissolved iron or bicarbonate concentrations in water supplies only can occur if transfer hoses and tanks are not drained thoroughly of all rinse water.

Well abandonment

The procedures for well abandonment are an important part of all state laws, for the long-term protection of groundwater supplies and public health.[2] All well-drillers should be intimately familiar with the protocol, including abandonment reports that must be filed with the local environmental health official.

If any irrigation or domestic wells on your winery property have not been abandoned 'officially,' contact the local regulatory body that has jurisdiction. If you haven't followed the law, it's better to fully disclose the oversight. Otherwise, the uncapped well may emerge as a problem upon sale of the property, or discovery by state or local enforcement officials.

Well cleaning and performance enhancement

If a well's performance continues to deteriorate over time, with longer periods from the time of pump shut-off until full static water level is reached, mineralization probably is to blame. The well screen or 'torch cuts' in the well casing can become reduced in size due to mineralization and the growth of tubercles. These stalactite/stalagmite-type mineral growths can effectively plug screens and casing slots.

Before and immediately after cleaning, it is advisable to conduct a pump test to assess the benefits of the operation. A down-casing television inspection can be very revealing, and indicate to the well-cleaning company the most effective method required (brushing, acid treatment, or a combination of both).

Pump tests

Pump tests were mentioned as a method of assessing the hydraulic performance of wells prior to and after cleaning. Pump tests routinely are performed on new wells to establish performance parameters, *i.e.*, well yield at stabilized drawdown, maximum drawdown, turbidity, and pump size.

On existing wells, properly performed pump tests measure electrical input versus mechanical/hydraulic output, or overall efficiency. These measured and calculated values can be compared to the pump manufacturer's so-called performance curves to determine the general health of the pump and the effects of accumulated wear on operating characteristics.

California's Pacific Gas & Electric Co. customers who operate well pumps with five horsepower or greater can take advantage of that utility company's free pump testing service (described in this column, ***PWV***, May/June 1992). ■

David Storm is a Consulting Civil and Sanitary Engineer and owner of Winters Winery.

References

1. **Betz Handbook of Industrial Water Conditioning,** *Betz Laboratories, 8th Ed., 1978.*
2. *Bulletin No. 74-90, California Well Standards, California State Department of Water Resources, January 1990.*

✍ **Dear Jake Lorenzo:**

I've been reading your stuff in ***PWV*** for years. I've always enjoyed your writing immensely, but the May/June'92 column 'hit home.'

I live in the Mother Lode area in California where there is still a 'thread' of pioneer spirit and a chance for those of us who are 'unique' to live the good life outside the 'mainstream.'

I began making wine in the 1970s; my passion for the grape led me to bond my own winery in 1986. I knew it wouldn't be easy — you see, I was born without ... a silver spoon. But I was convinced my talent and this passion I had for the art of winemaking would prevail.

It is now 1992 — I just spent $7,000 on new foil capsules **without** lead, that despicable killer of oenophiles. The Feds wanted $1,000 by July 1. It was a 'special tax' on top of the tax I pay per gallon. California has increased its tax per gallon — after all, there is a budget deficit.

No insurance company in its right 'corporate' mind would **bond** this tiny operation.

All the local bankers laugh when I ask for a loan secured by all those weird looking tanks, barrels, and winery equipment.

The cost of labels (with all the required warnings to save pregnant women, etc.), glass and corks also keep going up, up, up — and oak. I think you covered it well in your column. I could go on. Pop one of my bottles of wine; I think you'll like it.

It's not only the current hard economic times, Jake. It's the erosion of the 'pioneer spirit' — tax, regulate into oblivion, charge what the 'traffic will bear' for supplies, equipment, etc. Sebastiani, Mondavi, and the ancient family-based wineries can afford it. Japanese and foreign-owned wine conglomerates can afford it. Who the hell will miss my 2,500 cases of wine?

I'm thinking about giving up, Jake. I'm 42 and I'm tired. I love the hard work in the cellar and at the winery. But the **bureaucratic bullshit** and the hard economic times are making me tired and breaking that 'spirit' I once had.

I just don't seem to have the same passion I once had for this 'business.' I wake up in a sweat now because I owe the bank $30,000 — that I don't have.

I wonder in 1992 if I made a big mistake chasing a 'pipe' dream back in the 1970s. That's what my ex-wife thinks. These **are** hard economic times — I think I could weather the storm. But there is **more**. I won't even discuss such 'subtle' things like the neo-prohibitionist movement. I'm tired, Jake. Perhaps there's room for another guy in your new endeavor.

Enter Richard Matranga, welcome companion. Richard Matranga is a charming scallywag — He's a first-rate musician, well-versed in legal matters and makes one 'shit-kicking Port wine.' Funny, too. Now available to help you enjoy all that expensive crap you've been working so hard to acquire.

Great concept, Jake! But you'd probably have to obtain a city business license and pay a State franchise tax; the attorney general would scrutinize such a business for misleading claims you know. The IRS would surely tax you on such obvious benefits. Before long, you'd probably be worried about the overhead too.

Regards,
Richard Matranga, Winemaker
Sonora Winery & Port Works
Sonora, CA

✍ **Dear Richard:**

Thanks for the Port and for the contribution to Kieran's Cellar. Thanks also for your passionate letter. You have paid Jake Lorenzo the ultimate writer's compliment by taking the time to write in response to my column.

I've been writing for quite some time about exactly the kinds of things you described in your letter. As you have recognized, I share your passion and frustration.

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Jake Lorenzo's got no advice to give anyone. Hell, it's hard enough trying to advise myself. Personally, I've learned this about the wine business: I've always loved wine, and I always will. I've never cared much for business, and I'm not going to start now.

For me, wine is art. It has the power to transport us to a higher plane. It empowers us with visions of possibilities. It is different in each and every encounter. It is different for each one of us. It resists definition and quantification. It is eternal. People will always make wine, just as people will always write, sing, and paint.

Business is based on profit, not a bad thing, in and of itself. Unfortunately, profit (and therefore business) is selfish. Sooner or later, when the shit hits the fan, when the economy goes into the dumper, when push comes to shove; business acts to save itself.

I've heard business justify doing some pretty despicable things by saying that it must, to survive. Business people make the argument that if their business doesn't survive, then they will be unable to do beneficial works later on.

Jake's law of life reads: "For every thing gained, some thing was sacrificed." (This is certainly the law of winemaking.)

If you must do something despicable to survive, then you will forever be a little despicable yourself. Make a few despicable sacrifices in a row and you'll never get back to where you thought you were headed. You may gain survival, but you risk sacrificing the dream.

Richard, you mentioned the 'erosion of pioneer spirit.' There is no such thing. A pioneer is the person who goes first, or does something first, and so prepares the way for others to follow. We can't all be pioneers.

Pioneers are imbued with the artistic sensibility. It is the visionary artistic sense that allows them to risk being first. The exhilaration of discovery is a powerful stimulant, and the joy and well-being provided by that stimulant cries out to be shared.

Imagine the disappointment of the pioneer who discovers that no one wants to follow, that no one wants to share in the dream, that, in fact, people have no idea what the hell the dream is.

We can't all be pioneers, too few of us have the stomach for it.

Richard, we have never met, but I doubt that you are losing your passion, or that you risk losing your spirit. Rather, I think you have a flu, the business flu.

I think you have that artistic sensibility, and it is speaking to you now. It is telling you that business is selfish where you are not. It is telling you that the dream was yours, and belongs not to others. It is reminding you to take joy in your own process of creation, and to remember that no one else can share the exhilaration of your own personal pioneering.

We can't all be pioneers. We can be artists.

I know one thing for sure. Jake Lorenzo's got no business worth being despicable, and I'm always going to be artist enough to enjoy a good bottle of wine, or port.

Keep drinking, and keep in touch.
Sincerely,
Jake Lorenzo ■

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Label scuffing

By Richard S. Clark

"Will the label on the bottle resist scuffing?" This is an important question in the wine industry, accompanied by a great deal of anxiety.

Hundreds of hours of careful attention to winemaking, marketing, label design, and fine printing can be lost by having a $22 bottle of Chardonnay placed on the retailer's shelf with a label that is torn or, at the minimum, heavily scuffed from shipping and handling.

Not surprisingly, the American wine buyer's response to a scuffed label is: "No! If it's not right, then no thanks." Nobody wants to put a bottle of wine with a battered label on their table for a special meal.

What's a winery owner to do? Are there any guarantees, any proven methods that will make the labels appear intact 100% of the time? Unfortunately, no. But there are steps between design and shipping that can serve as checkpoints to help prevent scuffing and maximize the chances of a clean delivery.

Selecting a designer

The first step is to choose a label designer who is aware of how the design can overly complicate the printing process, thus increasing the chances of scuffing. Common sense dictates that you should choose your designer by their experience in working with wine labels, not posters, brochures, or annual reports.

Printing and designing wine labels is a highly specialized process. If you don't accept this reality, you automatically open that process to anyone who calls themselves a label designer.

An experienced label designer should give you a design that is long-lasting, positions your wine correctly, and at the same time, slightly pushes the capabilities of the printing process. Just as important, he or she should move the label design comfortably into the future and not be satisfied with copying what has been successful in the past.

When the final design is chosen, and before the mechanical artwork is done, the designer should give the winery client an assessment of how well the label will print. If the label needs minor changes, and successfully has been printed, shipped, and sold before, you don't have to lose much sleep. If the paper stock, embossing, foiling, and present coating of either varnish, lacquer, aqueous coating, or ultraviolet (UV) will remain the same, then relax.

However, if this is a new label design, then **beware**! Professional designers are only human. At this point an honest designer will tell you that he or she can't fully predict the scuffing potential of the new label.

The designer should also ask for a press-proofing, or trial run, as it is sometimes called. The trial run allows the designer and client to test various weights and types of paper stocks and coatings for both marketing image and scuff resistance.

"The trial run provides the winery with real samples of the label which can be put on bottles," says Cynthia Maguire, Senior Designer, Colonna, Farrell: Design Associates, St. Helena, CA. "The labeled bottles should be packed into cartons for trial shipping over a long distance and back by UPS or truck, or at least tested with a Sutherland rub tester. These methods are the best we know of at this time.

"The press-proofing costs as little as $150 per color, or up to $2,500 total, if many different printing runs are necessary. Another fee the designer should quote the client is a cost for a final press check of the label — no matter where the printing is to be done."

"Given the economic and competitive situation we are dealing with now and in the near future," says Jerry Zalusky, Sales Manager, Blake Printery, San Luis Obispo, CA. "Customers will probably only press-proof the most difficult ones to visualize or those that stick out as possible headaches on the bottling line. For this reason, I recommend working with a talented, experienced label designer."

The printer

The printer is the second important person in the trio of designer, printer, and carton manufacturer, all of whom either will make or break your marketing director's day.

All experienced label printers can offer the available label coatings. However, in some cases, a separate company, such as Graphic Coating Co. in Emeryville, CA, applys the label coating. "There is no magic about having the printer complete the entire process in-house. There are horror stories either way," says Bob Hillis, General Manager of Calistoga Press.

"The checkpoint is whether the printer is a good communicator and, most of all, has a good working relationship with both the designer and the coating house.

"Ask the printer about his working relationship with the designer," Hillis urges. "The response you need is almost a yawn — they have worked together many times and it is a good relationship. If the printer is not familiar with your designer, there may be problems. Insist that the designer and printer meet and form a mutual, professional understanding of each other's work.

"The success of this meeting will tell you more about whom you have hired and their experience and general professional nature. If this is the beginning of a 'that's his problem' approach by either party — then get new participants in your party! You cannot afford the possible disasters that might come.

"Ask the printer what he knows about the designer's reputation. Most major mistakes of over-complicated designs that are impossible to print hit the rumor mill quickly in the printing business. This applies to big mistakes in the scuffing department as well. The printer often will know what the cause was and have learned from industry gossip," Hillis says.

Also, ask the printer how long he has worked with the coating supplier. Occasionally, because of costs or scheduling problems, printers try a new source. Suggest that the printer use a new source on a job other than yours. If your deadline permits, mention that you will wait an extra week or more, if necessary.

"No matter where the coating is going to be done, ask for samples!" suggests Steve Wignall, Vice President of Graphic Coating. "Once in hand, call the other wineries and ask about any scuffing problems and known causes."

Once you are ready to go to press, don't expect the printer to make up for any lack of planning or decision-making by the winery or designer. Don't assume that he can just 'put your job on next.' Printing press scheduling is like boxcars on a long train; the first job is ahead of you because it arrived first.

"More importantly," Hillis adds, "demanding a rush printing job possibly could compromise the printer's art. If the printer has the necessary time to think about your job and confer with the right suppliers, the printer will be able to give you more satisfaction, and be more likely to avoid any problems."

Greg Mackie of Gordon Graphics, Novato, CA, one of the major wine label printers in California, reminds all customers that, "Printers don't control packaging decisions — so we can't guarantee scuff-free labels. We are only one part of a complicated process that involves many professionals working together. The longer the printer has been producing wine labels, the better."

Varnish (and its application, sometimes of more than one coat) is probably the best known coating today. Second most popular is book lacquer. Aqueous coatings, which became popular in the mid-1970s for application on record jackets, cosmetic boxes, and food cartons, are now being used more by label printers. Label printers also are using UV coatings, which require an expensive original capital investment and equally costly environmental compliance procedures.

This information tells us two very important things. First, the designer must be familiar with the printer's coatings as mentioned above. Second, with four variations of coatings available and about a dozen paper stocks (both coated and uncoated) used regularly for wine labels, there are not many simple answers to matching label papers to appropriate coatings. However, here are some basic guidelines:

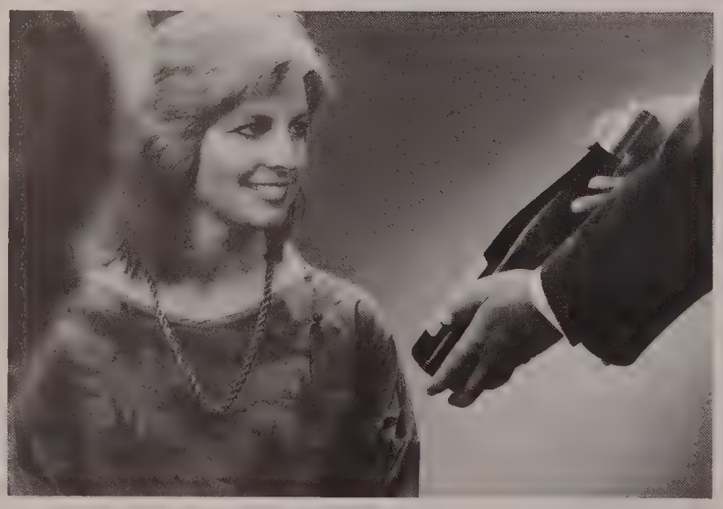
• UV coatings are much more effective when used on a coated stock such as C1S label or kromekote (a higher gloss paper than C1S and more dependable from a printing point of view). These furnish the expensive look and reflective quality of high gloss. However, not all printers offer the UV process, due to the expense of the machinery and government regulations. (Government regulations deal with how the UV machinery emissions are refined before being released into the atmosphere.)

• Generally speaking, aqueous coatings are not as protective and don't provide the gloss of a UV coating. "They do provide superior rub (Sutherland Rub Test) resistance as compared to press varnish," says Michael Lauesen, Vice President of NICOAT, Chicago, IL. "Compared to press varnish, aqueous coatings will not yellow. They also can be formulated to increase the whiteness of a sheet and increase the brightness of colors. The gloss level should be as glossy as press varnish and often signficantly higher. They are also completely biodegradable."

"Like UV, however," Wignall adds, "they are not available at many smaller label printers. But they can be included in the total process by having the printer use a coating house like Graphic Coating or NICOAT, and this should be reflected in the estimate given to the customer. They are not as effective when used on uncoated stocks such as the Simpson Estate line of papers, because they make the paper tough to cut and could curl the paper after cutting."

• Book lacquer is more protective than varnish and can supply a satin finish.

"If it is a nitrocellulose-based product, it is noxious, flammable, and high in VOCs



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(volatile organic compounds) in a liquid state," Lauesen says. "However, once cured and applied, these coatings for book covers are **very tough**."

"Book lacquer is more protective than aqueous coatings," Wignall says, "and it is well-suited for both coated and uncoated stocks. It will not curl the paper stock like aqueous sometimes will."

• Varnish is both the least expensive and the most widely used label coating. It may require more than one coat to provide adequate protection.

However, the more varnish is applied, the more it yellows the label — a process referred to as 'dryback.' It makes the label appear to have aged, a look some wineries find appealing. But dryback presents problems if a label aims to depict youth or freshness, or if it consists of a delicate color balance. Unfortunately, the results aren't immediately observable. Over several years, the yellowing can establish a look that is much different than that of newer products being released.

"The use of varnish as a coating and its durability should be among the first specifications reviewed by the printer with a client," says David Marquis of Fine Arts Graphics, Tualatin, OR. "This may be at the time of prospecting a potential client, or when an existing client explores changing stock. Understanding the limitations and advantages of compatible stock, processes, and varnishes can determine whether a job will succeed or not."

Carton coatings/liners

Cartons are the last part of the design, printing, carton manufacturing, and packaging process that must be examined for potential scuffing problems.

Assuming you get the label on the bottle without any problems, you also are faced with putting the labeled bottle into the carton safely — no easy task at times.

"If a winery wants the bottles to act as structural support, then the depth of the carton should match the bottle height," says packaging broker Dianne Farrar of Dj's Graphics, Pinole, CA.

"Otherwise," says Woody Thompson, Marketing Manager of Rock-Tenn Company's Partition Division (Atlanta, GA), "Reducing label damage depends heavily on restricting vertical bottle movement in the cell during shipment. This can be accomplished by specifing a liner and carton height 1/16-inch less than filled product height as compensation for embedding of the bottle in bottom flaps or pads while still maintaining a good vertical marriage of all packaging components."

Although vertical movement should be restricted, horizontal movement of the bottles within the cells is a different problem. "Excessive side-to-side space in the cell," notes Thompson, "encourages breakage in transit and a tight cell guarantees constant contact between the liner and the label. Ideally, the useable cell size should be about 1/16-inch larger than the bottle diameter."

"Most suppliers use natural kraft board for liners," adds Farrar. It's the amount of space around the bottles, or the 'cell size,' that can create problems.

"You shouldn't feel a lot of pressure when you put the bottles in. You want the bottle to just lightly touch or be a little loose against the liner but not push against

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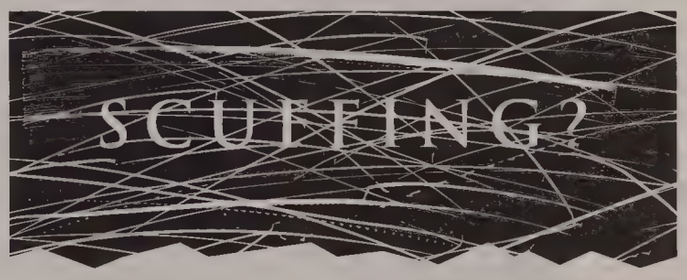

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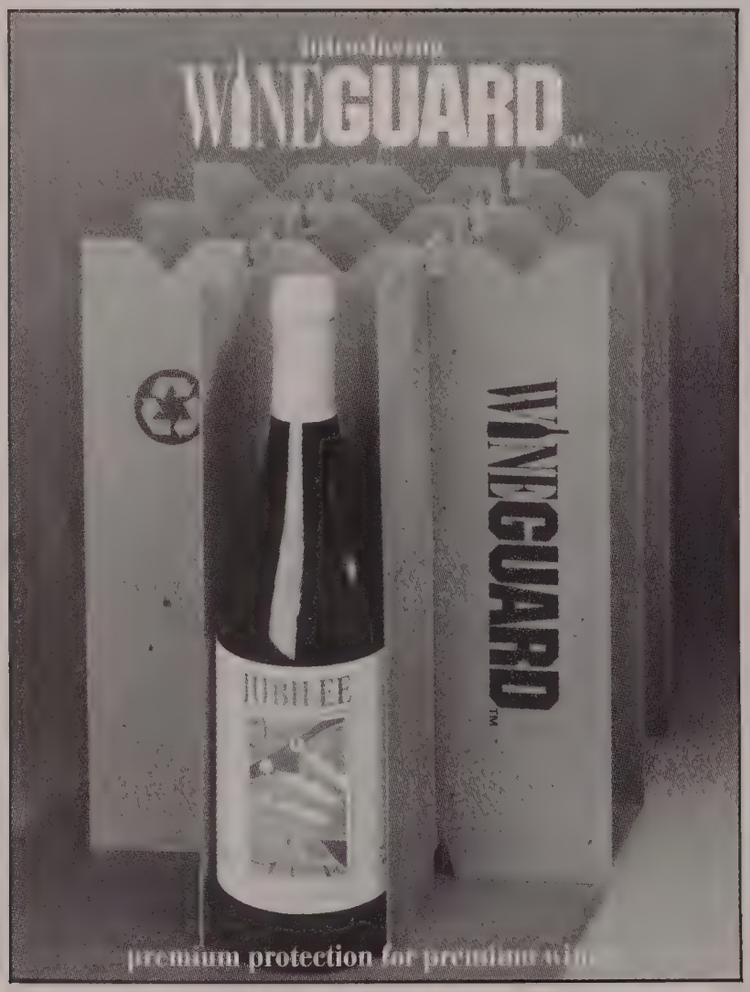
it noticeably." The imbalance between too loose and too tight is what most wineries see as a major cause of label scuffing.

"Along with the cell size, various types of formed pulp inserts hold the bottle in place at the base and neck, inside lay-down cases. These do not give the support necessary for a box in which bottles lie horizontally. Such inserts are prone to produce scuffed capsules if they have rough edges that fit too tightly around the capsules," Farrar adds.

"Not all lay-down cases are designed the same, however," says Shaw. "Some with non-abrasive inserts have been very effective in offering a premium presentation, especially when the bottles are tissue-wrapped either individually or when the tissue weaves through the bottles and then is used to cover over again the bottles as a flat sheet."



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In order to guarantee clean labels, some wineries have tried three packaging techniques. However, they have their own problems as well.

First is 'curtain coating' for the liners: a coating of soft, protective wax applied to the liners. It practically guarantees a clean delivery. However, to avoid having the hot new bottles at the manufacturing plant melt the wax, the bottle manufacturer ships the bottles separately to the winery. This causes additional storage and bottling line problems for the winery, and an increase in total packaging costs. Of course, there is the additional possibility of the just-labeled bottles melting the wax, as well.

The second method is tissue-wrapping, where each bottle is wrapped. However, this is only sensible for small producers desiring a premium image. Tissue can conflict with mass-marketing delivery techniques such as instant shelf presence in a supermarket setting. It also can be a very expensive process as the case volume goes up.

The third method is to look at the construction of the partitions themselves. The wine industry has used corrugated partitions for many years. However, corrugated has a rough, thick surface, and tends to be a 'dirty' material. It leaves dust in the carton, warehouse, and sometimes complicates the bottling itself by getting mixed with the wine during bottling.

The present alternative is chipboard liners. Like the design and printing process, the use of chipboard liners is being refined constantly by purchasing managers and bottling line supervisors.

Chipboard has been used for food packaging since the 1940s. Rock-Tenn Company (Atlanta, GA) offers three grades of chipboard partitions: a regular grade, an upgraded water and starch finish, and a new grade specifically designed for wine packaging called WineGUARD. WineGuard is denser, more rigid, and has a much smoother and less abrasive finish than the regular grade of chipboard. An independent testing laboratory in Chicago, using the standard Sutherland Rub Test, has produced data that shows WineGUARD provides over six times the amount of label protection as corrugated partitions. It is also 100% recycled and 100% recyclable.

Forrest Noel, Director of Operations for Cook's Champagne, uses the water and starch chipboard because, "it's less expensive, recycled, thinner, and experiences less breakage." Noel had no prob-

lems with scuffing before using the chipboard, but felt it was a more economical product.

Gordon Larum, Purchasing Manager, Robert Mondavi Winery, says that since introducing chipboard liners, their 3% to 4% scuffing problems have reduced to about 1%.

"Additionally, the cases with chipboard partitions can be stacked as high as six pallets (five cases each) without other support," he says. "This has allowed us better use of warehouse space where we previously stored wooden pallets."

To help prevent direct contact between the label edge and the liner when the bottles are inserted in the case, Robert Mondavi Winery uses a 'V' notching on the top center of the chipboard top edge.

In attempting to achieve a 100% scuff-free delivery, an interlocking design to the liners keeps the lateral movement and contact of label to liner to a minimum. "We bottle up to 35 cases/minute and are very concerned with our retail presentation," Larum adds.

Larum requires a label to pass a Sutherland Rub Test of 1,500 rubs without problems. Most printers use 600 to 800 rubs as a rule of thumb, depending on the design, ink coverage, use of foil, and paper uses.

Jim Takahashi, in Quality Control at Domaine Chandon, says, "We went to chipboard for most of the same reasons that Mondavi did. In particular, we like the fact that the labels don't catch on top of the chip liner as much as they did on corrugated liners."

The decision is not completely in on the use of chipboard versus corrugated. However, as the industry continually demands better packaging that is environmentally friendly, chipboard will be a part of that consideration.

Conclusion

Like all food producers, the winery's marketing efforts are aimed at maintaining a consistency of presentation to the consumer over the long-run. This builds consumer confidence in the product and greater brand loyalty and product equity for the winery.

Seemingly minor label changes from year to year will confuse the buyer and cast doubt about the quality of the product. But when an updated look is required, it's important to find the right designer, printer, and packaging techniques.

"All of the efforts in design and production may be lost if the label varnish won't withstand a potentially ruinous journey from winery cellar to table," says Fine Arts Graphics' Marquis.

Label scuffing is a frustrating end to a long series of carefully planned procedures that, somehow, have missed the mark. Again and again you hear the same opinion concerning scuffing: Know your individual bottling line situation intimately, know all the parts that go into making your finished product, and once successful, don't change anything without considering the whole process.

"There doesn't seem to be any magical answers," Graphic Coating's Wignall says. "We have been doing this for 25 years and with wine labels there are no short cuts." ■

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Grapevine importation revived at FPMS

By Susan Nelson-Kluk,
Manager, Foundation Plant Materials Service

For the first time in four years, grapevine importation services again will be available at University of California, Davis, CA. These services will be provided as part of a national grapevine importation program conducted by Foundation Plant Materials Service (FPMS) in newly-constructed facilities.

Applications for importation services are now being accepted by FPMS from grapegrowers throughout the U.S.

The previous grapevine importation program at UC Davis ended in 1988 upon the retirement of Dr. Austin Goheen. Dr. Goheen provided grape importation services as part of his U.S. Dept. of Agriculture (USDA) Agriculture Research Service project from 1960 to the early 1980s.

The program's cancellation created a serious shortage of facilities because greenhouses, growth chambers, lath house, and field areas used by Goheen were reassigned to other scientists. The facilities no longer were available for grape quarantine work.

Individuals and companies were forced to wait many years to import grapevine materials, and sometimes were unable to find a legal method. As a consequence, the incidence of illegal importation may be quite high.

Many grapegrowers were very concerned about this situation because importing foreign exotic pests and diseases poses a serious threat. Foreign pathogens can carry tragic consequences, such as the terrible damage Dutch Elm disease has caused in the American urban landscape.

Another example occurred in the last century when European vineyards were devastated by the downy mildew disease and the phylloxera pest was introduced from the U.S. The threat of a similar disaster occurring in this country is very real.

Several foreign grape diseases — among them flavescence doree and grapevine bacterial blight — could cause catastrophic damage to the grape industry if introduced into U.S. vineyards.

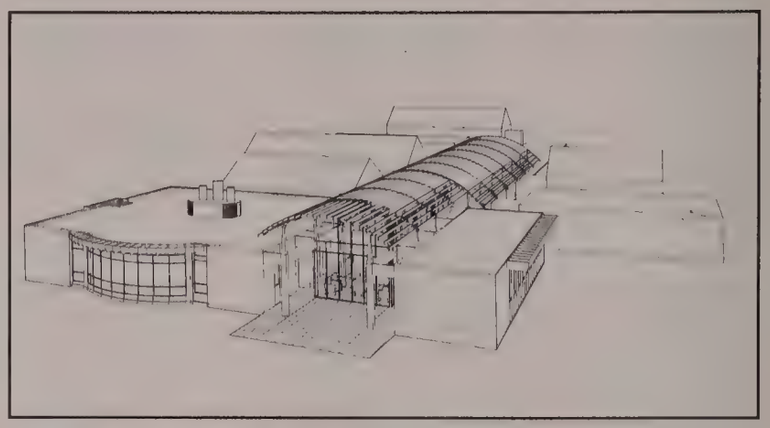
Importance of importation program

Potential benefits from foreign grapevine introductions are well-recognized. Winemakers want new wine-grape clonal selections and varieties that have already been developed and evaluated in other wine-producing regions throughout the world. These materials will help enhance wine quality and thereby improve the ability of U.S. wineries to compete in foreign markets.

To increase profits, winegrowers need access to new materials selected for disease resistance and/or the ability to grow in marginal climates. Table and raisin grape producers require access to new varieties developed in South America, Europe, South Africa, and Australia so they can compete with foreign producers and lessen U.S. dependence on foreign products.

Foreign rootstock materials need to be imported and tested to help solve recently-detected phylloxera resistance problems. Foreign materials are required to use as a reference aid in correctly identifying some grape varieties.

Also, in order to benefit the industry long-term, a worldwide search for new pathogen resistance needs to be conducted.



ABOVE: National Grapevine Importation & Clean Stock Facility—architectural drawing.
LEFT: Inside a completed greenhouse.

Genetic resistance ultimately may provide the means for improving grape crop quality independent of chemicals used in the vineyards.

Procedures used to qualify grape material for release from quarantine currently require two to 10 years or more to complete. Much of the time is spent conducting lengthy field indexes to test for disease and treating selections to eliminate disease. Facilities in which to develop and implement faster disease detection and elimination methods are needed in order to shorten quarantine period in the future.

New program

In 1988, when the industry was grappling with these problems, it was suggested that FPMS at UC Davis would be an ideal organization to provide grapevine importation services. FPMS has supplied disease-tested, California Foundation stock throughout the U.S. and the world for over 30 years on a self-supporting basis. FPMS is closely associated with the Dept. of Viticulture & Enology at UC Davis and the California grape industry, which is responsible for 95% of total U.S. grape production.

Grape industry advisors worked together with FPMS to plan, build, and operate a national grapevine importation and clean stock facility. The goals for the grapevine importation program to be conducted in this facility are:

1. Provide readily accessible grape importation services for the U.S.

2. Protect the national grape industry from dangerous foreign pathogens.

3. Improve grape disease detection and treatment techniques used for grape quarantine procedures.

The new facility is being constructed at FPMS, UC Davis, in four phases. In Phase I (FY 1990), facility planning was completed, and a quarantine screenhouse and clean-stock green-

house were built. In Phase II (FY 1991), a primary quarantine greenhouse, indexing greenhouse, soil storage, and headhouse floor and roof were built.

Construction of a portion of a lab/office building and headhouse is planned for Phase III (FY 1992). The lab/office, headhouse, and second indexing greenhouse will be finished in Phase IV (FY 1993), if funding is obtained.

The greenhouses and headhouse shell completed in August, 1992, will be used to implement grape disease testing necessary to meet federal requirements and provide grapevine importation services. These services will be limited to importation and testing. Treatment services will be offered later, upon completion of the necessary facilities for this work.

A national advisory committee composed of U.S. industry representatives and scientists will provide FPMS with advice on developing a protocol for allocating importation services and ensuring national access to the program.

The FPMS role in the grapevine importation process will be confined to importing, treating, and testing foreign selections so that they can be qualified for release from quarantine. Evaluation of new materials also will be important, but unfortunately the budgets of the researchers best-suited for this work are in serious jeopardy. It is imperative that support for general viticulture research be continued to gain the maximum benefit from new materials.

To apply for grapevine importation services contact FPMS, University of California, Davis, CA 95616, tel: 916/752-3590, or FAX: 916/752-2132 for applications and more information. ■

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COST EFFICIENCY:
Key to winery success

By Carol Caldwell-Ewart

Some of the most profitable wineries can attribute their financial health to efficient cost management, according to results from the Fifth Annual Wine Industry Financial Survey. But, overall, winery ownership is becoming less profitable each year, the survey showed.

Survey results, recently presented at the 1992 Hambrecht & Quist Wine Industry Financial Forum in San Francisco, CA, clearly demonstrate this trend which has remained consistent since the first Wine Industry Financial Survey in 1987.

Even the industry's top performers, though far out-distancing the average, showed a significant loss of profitability over the five-year period, (see Fig. I). Average earnings before interest and taxes dropped from 21% in 1987 to 12% in 1991.

"Increasing costs and competitive pricing are squeezing returns for everyone," says Jon Dal Poggetto, CPA, partner in the international accounting firm, Deloitte & Touche (D&T), and head of the company's Santa Rosa, CA, office. D&T developed the survey to provide comparative data on the financial performance of wineries.

The annual survey provides new insights into the factors that allow the most successful wineries to financially outperform competitors. In the survey of 1991 data, 77 wineries participated.

Of the participating wineries, 71 had sales under one million cases/year and nearly all were California wineries. With $1.2 billion in revenues, they account for 51% of all California table and sparkling wine dollar-sales, and more than 50% of all California sales of premium, super-premium, and ultra-premium wines. Over 70% of the wineries had participated in previous surveys.

To make it more useful to wineries, the 1991 survey was altered to identify more critical areas where top producers outperform competitors. New survey questions asked about salaries and the number of employees, for example.

In addition, the survey redefined traditional market segments into smaller segments, to show more clearly where the high-growth price segments are. "By examining product pricing in smaller categories, we get insights we didn't have before on where the markets exist, particularly in Cabernet Sauvignon and Chardonnay," Dal Poggetto notes.

Fig. I

FINANCIAL PERFORMANCE SUMMARY

		1987	1988	1989	1990	1991
❑ Overall, industry returns are materially down from prior years.	EBIT on Assets (ROA)	10%	9%	8%	7%	5%
	EBT on Equity (ROE)	17%	12%	9%	8%	4%
❑ However, for the top quartile of participants, rewards continue to be significant.	EBIT on Assets (ROA)	21%	17%	17%	16%	12%
	EBT on Equity (ROE)	36%	28%	33%	33%	24%
❑ For the poor performers (bottom quartile), losses can be significant.	EBIT on Assets (ROA)	(6%)	1%	(2%)	(6%)	(5%)
	EBT on Equity (ROE)	(114%)	(2%)	(19%)	(17%)	(16%)

Fig. II

PRODUCT POSITIONING

		PRODUCT MIX			
		% Chardonnay		% Cabernet	
Price Category (Retail $/Bottle	Growth	Top Performers	All Others	Top Performers	All Others
$12 - $14	High	43%	7%	6%	4%
$7 - $9	Medium	4%	6%	0%	6%
$3 - $5	Medium	0%	1%	0%	1%
$5 - $7	Low	5%	4%	1%	2%
Misc.	Negative	12%	14%	1%	4%
Total		64%	32%	8%	17%

What sets the winners apart?

"According to the survey, the best performing wineries succeed through a very efficient approach to their labor force," Dal Poggetto says. "This is true, not just in production, but in selling, marketing, administration, and generally throughout each organization."

The disparity between the best and the worst is dramatic in wineries producing under one million cases/year. The top 14 producers had more than twice the average labor efficiency of all wineries in the survey. They averaged $420,000 in sales (7,000 cases sold) per full-time equivalent employee (FTE) compared to the overall winery average of only $195,000 in sales (3,000 cases) per FTE. Labor costs for top wineries were less than 50% of what competitors spent on labor costs.

Other cost efficiencies also are significant. The best performers spent only 12% of every sales dollar earned in sales on marketing. Other participants averaged 22%. Top producers spent about $\frac{1}{3}$ as much on the tasting room as the others, about $\frac{1}{2}$ as much on advertising and merchandising, $\frac{1}{3}$ as much on promotional expenses, and about the same percentage on programming allowances.

But the important sales expense difference is revealed in a comparison of expenditures for national marketing agents versus domestic sales.

The most successful wineries spent $.03

of each sales dollar on national marketing agents compared to the $.02 spent by other participants. However, the top performers spent only $.04 of each sales dollar on all other domestic sales expenses (wages, bonuses, commissions, travel, and entertainment) compared to $.10 spent by other wineries.

On a cost/case basis, top performers realized a marketing cost advantage of $6.50/case compared to competitors, and 40% of that advantage was driven by the use of national marketing agents.

"In 1987, we found that the less successful wineries were those using national marketing agents," Dal Poggetto recalls. "What we've seen over time, is that the correlation between poor performance and using national marketing agents has reversed. Now the top performers use national marketing agents with a significant cost savings. They leverage the national agents in order to spend less on their own sales force."

Asset management is another key factor in achieving maximum performance for wineries producing under one million cases/year. (It was the most important factor for wineries *over* one million cases/year in the 1991 survey.)

"Every year, we see that the best performers manage their investments and fixed assets better than competitors do," Dal Poggetto notes. "They manage facility costs so well that they were able to generate almost three times more sales revenue per dollar invested in fixed assets than competitors." In addition, they had a much higher rate of inventory turnover.

Successful wineries also had a much more focused product line. "You usually find that top performers produce in fewer product categories than do competitors," Dal Poggetto adds. Successful wineries sold an average of 14 products compared to the 23-product average of others.

"Selling fewer products enables the sales staff to sell more efficiently," Dal Poggetto suggests. These wineries also sold more product in the top-selling varieties. Chardonnay accounted for 37% of the premium wine sold. Top-performing wineries sold twice as much Chardonnay as other wineries. Almost ⅔ of the wine they sold was Chardonnay.

The 1991 survey revealed another significant difference between performers. The top performers sold 49% of their wine in the fastest growing price segment of $12 to $14 per bottle retail for Chardonnay and Cabernet Sauvignon. Competing wineries only had 11% of their product priced there. (See Fig. II.)

Though the survey doesn't reveal *how* top-selling wineries achieved the efficiencies that gave them the edge, Dal Poggetto concludes, "The survey demonstrates it can be done." Wineries can examine the survey results, compare their own financial picture with top wineries', and easily identify areas where they need to make changes in order to improve performance.

"All California wineries receive an invitation to participate in the survey each year," Dal Poggetto says, "but those winery owners who want to be sure to participate in the 1992 survey can contact me."

Jon Dal Poggetto, Deloitte & Touche, 149 Stony Circle #100, Santa Rosa, CA 95401, tel: 707/525-3955. ■

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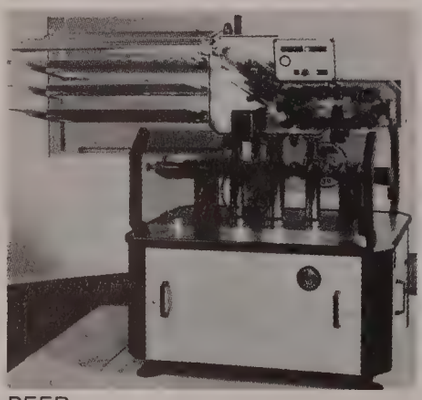
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Grapegrowing/Winemaking Courses, University Extension, UC Davis, CA

NOVEMBER 9, Monday — Grape Disease Management and Identification—Location: UC Davis. **Instructors:** Dr. Deborah Golino, USDA specialist; Doug Gubler, PhD, specialist, Coop Extension; James Marois, PhD, assistant professor. **Time:** 9am - 4pm. **Fee:** $100 (includes lunch).

NOVEMBER 14 & 21, Saturdays — Introduction to Wine Chemistry—Location: UC Davis. **Instructor:** Clark Smith, consulting winemaker. **Time:** 9am - 4:30pm. **Fee:** $120.

NOVEMBER 16, Monday — Out-of-State Compliance: Legal Requirements for Shipping Out-of-State — Location: St. Supery Winery, Rutherford, CA. **Instructor:** Andrea Anderson, compliance consultant. **Time:** 9am - 4pm. **Fee:** $120 (includes box lunch.)

NOVEMBER 30, Monday — Taxation/Accounting for the Small Vineyard—Location: UC Davis. **Instructor:** L. Gregory Scott, tax partner, Price Waterhouse Accountants, Oakland, CA. **Time:** 9am - 4pm. **Fee:** $130 (includes lunch).

DECEMBER 1, Tuesday — Taxation/Accounting for the Small Winery—Location: UC Davis. **Instructor:** See above course. **Time:** 9am - 4pm. **Fee:** $130 (includes lunch).

DECEMBER 1-3, Tuesday-Thursday—Table Grape Production — Location: Convention Center, 303 E.Acequia, Visalia, CA. **Instructor:** Nick Dokoozlian, Extension viticulturist, Kearney Field Station, Parlier, CA. **Time:** Tuesday, 8am - 8pm, Wednesday & Thursday, 8:30am - 4:30pm. **Fee:** $250 (includes lunches, dinner,& materials).

DECEMBER 5, Saturday — Introduction to Wine Analysis — Location: UC Davis. **Instructors:** Bob Bertheau, assistant winemaker, Chalk Hill Winery; Ernie Farinias, Dept. of Viticulture & Enology, UC Davis. **Time:** 8am to 5pm. **Fee:** $135.

DECEMBER 12, Saturday — Rhone Topics: Syrah and Viognier (Rhone and California) — Location: UC Davis. **Coordinator:** John Buechsenstein, winemaker, McDowell Valley Vineyard, Hopland, CA. **Time:** 9am - 4pm. **Fee:** $145 (includes lunch and tasting).

For further details and to enroll by phone, call 800/752-0881. Davis and Dixon residents or outside California call 916/757-8777. ■

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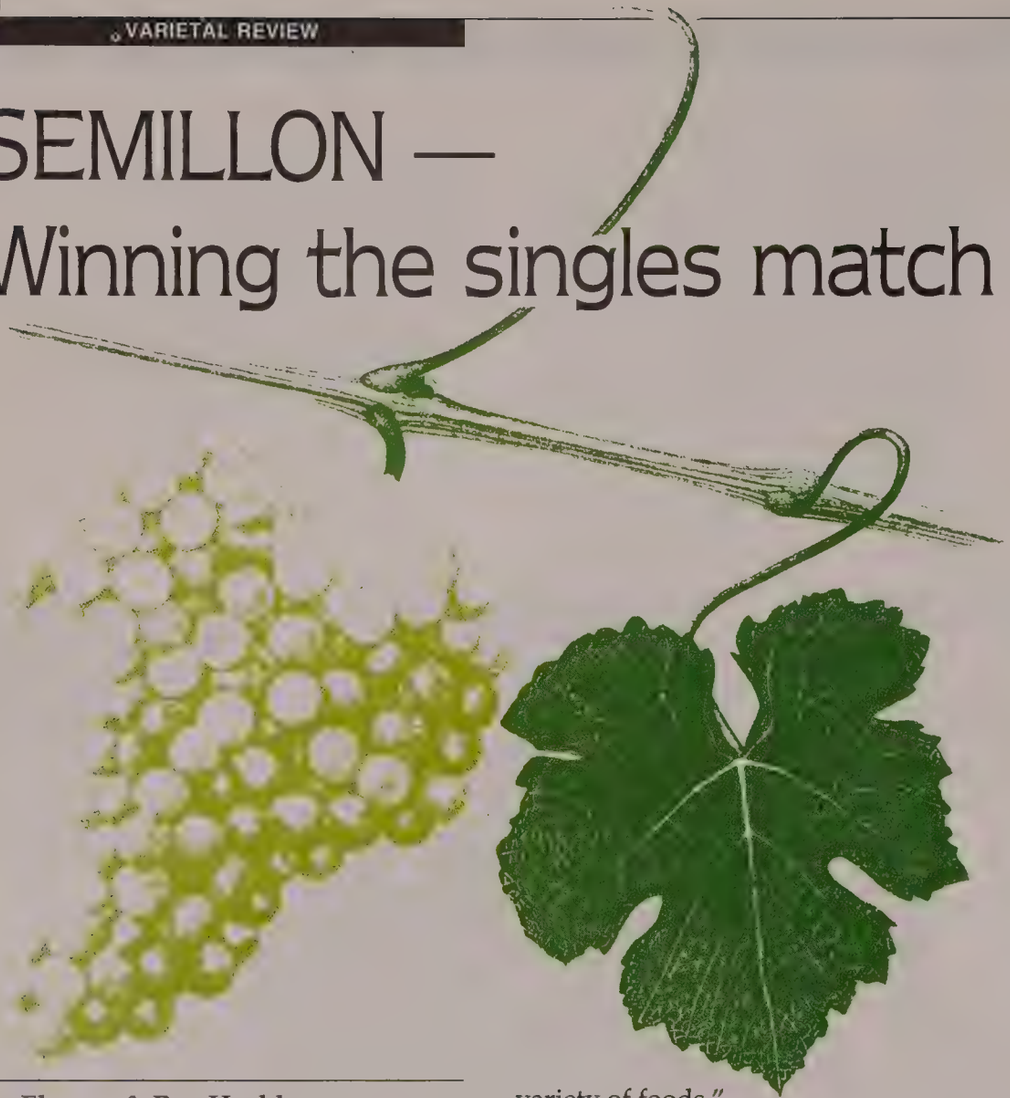
SEMILLON — Winning the singles match



By Eleanor & Ray Heald

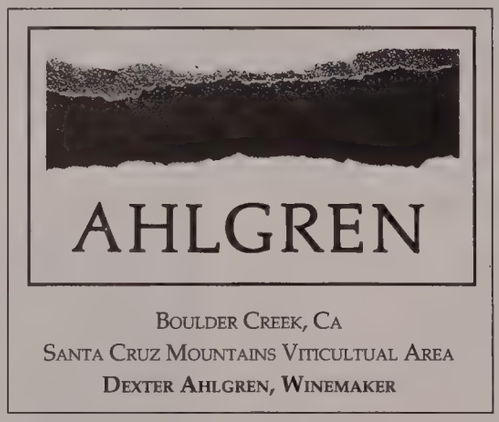
While cultivated widely in the Graves and Sauternes districts of Bordeaux and frequently throughout the Dordogne and southwest France, Semillon rarely stands on its own as a dry table wine.

Until recently, Semillon has resembled the tennis star who wins the doubles match with Sauvignon Blanc, but has not fared as well in the singles class. In Australia, Semillon has found a winning partner in Chardonnay, but is seldom challenged to stand alone. However, triumphs are occuring with greater frequency in the Hunter Valley of New South Wales and in Victoria.

Producers on the west coast of the United States, following the French model, have generally used Semillon in generous proportion to enhance the character of varietally labelled Sauvignon Blanc and the enigmatic Fume Blanc.

"Describing Semillon is difficult," Clos du Val's Krimo Souilah contends. "Sometimes the best word is Semillon. The principal problem with Semillon is that the consumer compares it to Chardonnay. They neglect the subtleness and elegance of the varietal and its ability to pair handsomely with a wide variety of foods."

Showcasing Semillon as a star singles performer, cast only in a minor role with its former regular partner Sauvignon Blanc, is the major design of this exclusive ***PWV*** review.



Style

Barrel fermentation adds mouthfeel, body, and richness to the Ahlgren Semillon. To preserve a natural crispness, it does not undergo malolactic fermentation. Ageing in two- to four-year-old American oak offers roundness without masking fruit with oak. The wine remains cellar-worthy for five to ten years.

Vineyards

The St. Charles Vineyard is located in the Santa Cruz Mountains, near the town of Los Gatos, CA. Dry-farmed and spaced 9x9 in medium shallow sandy, clay-loam soil, the Semillon (Yquem clonal selection) on St. George rootstock was planted in 1955.

In 1986, Sauvignon Blanc (U.C. Davis clonal selection) vines on AXR-1 rootstock were interplanted where old Semillon vines died. These younger vines are picked and fermented separately.

Both varietals are head-pruned. At pruning, the basal plus two additional buds/spur are retained on one or two canes. Vines are suckered in mid-season and yield from 0.5 to 2.0 tons/acre.

Wetable sulfur is applied prior to bloom. After bloom, two sulphur dustings and two applications of Bayleton are applied alternately. Foliar sprays are applied every other year.

For the 1990 production, Semillon was picked at 23.7° Brix, 1.08 TA, and 3.30 pH. The Sauvignon Blanc came in at 24.4° Brix, 0.89 TA, and 3.15 pH. Parameters for both varietals fall into the following window: 22° to 24° Brix, 0.7 to 1.0 TA, and 3.15 to 3.4 pH.

Winemaking

Both varietals are lightly crushed (without destemming) with a roller crusher, directly into a bladder press. Within 24 hours, the must is inoculated with 2.2 lbs/1,000 gal of pure strain, Pasteur (Davis 595) active-dry yeast.

Fermentation proceeds in barrel at 65° to 70°F. Occasionally during fermentaion, acidulation to a TA of 0.8 to 0.9 is done. Upon completion of fermentation, SO_2 is added at 50ppm.

The wine is blended and barrel-aged in two- to four-year-old American oak barrels for eight to nine months. In barrel, SO_2 levels are maintained at 25ppm free.

Bentonite additions vary, but usually range from three to five lbs/1,000 gal. The wine is racked off the bentonite and allowed to stand about one month.

Before bottling in June following harvest, the wine is filtered through a 1.0*u* depth filter and a 0.45*u* membrane. SO_2 levels measure 25 to 35ppm free and a maximum of 100ppm total. TA is 0.7 to 0.8, with a pH of 3.3 to 3.45.

The wine is bottle-aged four months prior to release.

Tasting Notes — 1990 St. Charles Vineyard (95% Semillon, 5% Sauvignon Blanc)

Color/Aroma: Medium-light yellow. Hay, straw, herbal, fig, oak; touch of vanilla; slight

grassiness; fresh fruit, pears, apricots.

Flavors: Develops in glass; oaky, toasty, creamy mouthfeel; smoky oak; forward, mouthfilling.

Balance/Finish: Good balance, body, finish; slightly hot; lingering oak.

Alderbrook

HEALDSBURG, CA
DRY CREEK VALLEY VITICULTURAL AREA
PHILIP STALEY, WINEMAKER

Style

Translating the clarity of varietal fruit, through ageing in neutral barrels, into the character of the finished wine is the principal aim. Additionally, every attempt is made to highlight individual vineyard characteristics. The varietal is preferred with more forward fruit.

Three to four years is the expected ageing potential, but Staley contends that Alderbrook Semillon continues to drink well into the sixth and seventh year.

Vineyards

Grapes, from 13-year-old vines spaced 8x12, are sourced from Paul Rued's dry-farmed vineyard, located mid-region in the Dry Creek Valley. The soil profile is sandy loam, about eight feet deep, with a rocky subsoil. Vines are trained on a bilateral cordon and pruned to 16 spurs with two buds/spur and a renewal spur.

Since canes from the Rizasco clonal selection tend to grow vertically, no canopy manipulation is done. Vines are suckered in May and leaf pulling is done after set. Crop levels average seven to eight tons/acre.

Sulfur is applied early in the growing season. Bayleton is applied in late season. A fungicide is applied prior to bunch closure.

While pH and fruit flavor govern picking decisions, the following parameters are monitored: 23.0° Brix, 0.60 TA, and 3.36 pH.

Winemaking

After all stems are removed, berries are gently broken in the crusher and pressed immediately.

If needed, acidulation to 0.80 TA is made prior to fermentation.

Inoculation with 1.5 lbs/1,000gal of active-dry Prise de Mousse yeast is done the day after pressing. Ammonium phosphate is added as a yeast nutrient when ammonium levels are less than 125ppm. Bentonite at 4-lbs/1,000gal is added during fermentation. None is added after fermentation.

After fermentation completes, SO_2 is added to 60ppm total. The wine is racked once and transferred to 60-gal French barrels (20% one-year-old) with light lees for 2½ months. In barrel, SO_2 levels are maintained at 30ppm free.

Before bottling in May, the wine is prefiltered using Supra 200 H followed by Supra EK. A 0.45*u* membrane is in line at bottling. Free SO_2 levels are 30ppm with an 80ppm total. TA measures 0.70 with a 3.3 pH. The wine is released after about four months.

Tasting Notes — 1990 100% Semillon

Color/Aroma: Pale yellow. Fig, melon and citrus elements; fruity and very varietal; broad spectrum of aromas.

Flavors: Crisp, fresh, youthful; medium intensity; melon, fig.

Balance/Finish: Fresh, fruity style with adequate length; lingering.

Clos du Val

NAPA, CA
STAGS LEAP DISTRICT VITICULTUAL AREA
KRIMO SOUILAH, WINEMAKER

Style

Production of a balanced and harmonious wine with full varietal character is the main goal at Clos du Val. The goal is a smooth, soft wine that is, however, sufficiently fresh to be enjoyed with appetizers, seafood, or on its own.

The expected ageing potential is six to eight years.

Vineyards

Vines spaced 6x10 on SO4 rootstock were planted in 1984, just north of the winery and east of the Silverado Trail. Soils are bale loam and clay with heavy soil to a depth of six feet. To add a richer fruit character, an additional 12% of the fruit was sourced from Paso Robles for the 1989 bottling only. Since the 1990 vintage, Clos du Val is bottling only 100% estate Stags Leap district Semillon.

Half of the home vineyard vines are vertically trellised with one fruiting wire. The remainder have two wires. At pruning, two canes with ten buds/cane plus five spurs are retained.

After bloom in early May, vines are drip-irrigated three times and suckered. In summer, shoots are tied and leaves are pulled. Vines are sprayed with alternating applications of dust and wetable sulfur every two to three weeks. Crop levels average four to five tons/acre.

Taste and grape maturity together with vine condition govern picking decisions. Generally, grapes are harvested at about 22° Brix, with a TA averaging 0.46 to 0.48, and pH of 3.3 to 3.5.

Winemaking

Grapes are destemmed, crushed, and pressed. After settling for 24 hours, the must is racked and inoculated with 2-lbs/1,000gal rehydrated Redstar Prise de Mousse yeast. Fermentation proceeds in Nevers oak 450L puncheons (one to four-years-old) at an average temperature of 54°F. If needed, acidulation is done at 16° Brix to a TA of 0.65.

SO_2 is first added in November or December at 40ppm. Wine remains in barrel for eight months with free SO_2 levels of 25ppm maintained.

For protein stability, bentonite fining is done following the barrel regime. The wine receives an EK and millipore filtration. It is bottled in June or July at 32ppm free SO_2 and 90 to 110ppm total; 0.58 TA, and 3.2 pH.

Bottle ageing is two years prior to release.

Tasting Notes — 1989 100% Semillon

Color/Aroma: Light, bright yellow; very varietal, floral, pleasant and outgoing; slightly tight; herbal, straw, melon.

Flavors: Delicate, refined, creamy; melon, straw.

Balance/Finish: Fruity, balanced, good finish; soft; good oak complement.

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DAVID LAKE, WINEMAKER

Style

Chevrier is a new direction for Semillon offered alongside the winery's traditional crisp, fruity, stainless-fermented wine. Chevrier, a regional French synonym for Semillon, is used by Columbia Winery to distinguish this wine from the original style.

The intent is production of a dry wine with Semillon fruit, lemon and fresh fig aromas, and a touch of grassiness from Sauvignon Blanc (11.5%). It is softened by 50% malolactic fermentation and given length of finish and a slight toastiness from lees contact.

It is believed that lengthy ageing, up to 15 years, is possible.

Vineyards

Grapes come from 18 to 20-year-old vines on their own roots, spaced 8x10, in two different locations. Sagemoor Vineyard is located in the Columbia Valley, and Otis Vineyard is in the Yakima Valley.

Both plantings are on a two-wire vertical trellis. Sagemoor vines are in a sandy loam soil of variable depth with calcareous subsoil. They are trained on a bilateral cordon and pruned to 40 buds/vine. Otis has deep sand and sandy-loam soil. Vines are fan-trained with three to five trunks, pruned 40 buds/vine.

Suckering is done twice in the spring. Due to excess vigor in some years, hedging is done in the post-flowering period and again, later in the season.

A sprinkler irrigation system is used to apply 18 inches of water between April and July. Yields average 4.5 to 5.5 tons per acre.

Fruit flavor is the principal factor regulating picking decisions. A typical harvest window is 20.5° to 22° Brix, 0.75 to 0.90 TA, and 3.1 to 3.35 pH.

Winemaking

After destemming and crushing, the must averages three hours on the grape skins with pectolytic enzyme to improve pressing efficiency. On the same day, the must (with juice lees) is inoculated with 1-lb/1,000gal active-dry Prise de Mousse yeast. DAP is added as a yeast nutrient.

If necessary, the wine is aciculated pre-fermentation to a predicted post-cold stability value of 0.60 TA.

Earlier attempts at barrel fermenting Semillon were not impressive, so Chevrier is fermented in stainless steel tanks at 55° to 60°F. SO_2 is added at 60ppm when fermentation is completed.

Half the wine is put through malolactic fermentation to develop flavor intensity. In February, after racking some barrel-fermented Chardonnay, Chevrier was transferred into these 60-gal Center of France, new to four-year-old oak barrels, and aged for five months on the Chardonnay yeast lees.

In barrel, SO_2 levels are maintained at 0.8ppm molecular. The Chardonnay lees offer an attractive fruit accent and a toastiness lacking in past barrel-fermented Semillon attempts. Since only ⅓ of the barrels were new, oak influence is muted.

Bentonite is the principal fining agent, but occasionally, ⅛ to ½-lb/1,000gal gelatin is added to remove astringency and for clarification.

Sauvignon Blanc is added for complexity at 11.5%.

Prior to bottling ten months after harvest, the wine is D.E. filtered and there is a 0.4*u* membrane ahead of the filler. At bottling, free SO_2 levels are 0.8ppm molecular and less than 100ppm total. TA is in the range of 0.6 to 0.7 with a pH

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between 3.1 and 3.35.

The wine is released within three to nine months.

Tasting Notes 1990 Chevrier - Semillon Sur Lie (11.5% Sauvignon Blanc)

Color/Aroma: Pale yellow. Closed in at the start; melon, spice, slight oak, fig; vinous, delicate; apple, citrus.

Flavors: Lactic, creamy, mature, heavy; citrusy, acid; good mouthfeel; melon, spice, oak, fig, slight pineapple.

Balance/Finish: Well balanced, ageable; short finish, balanced acidity; somewhat thin.

FENESTRA

LIVERMORE, CA
LIVERMORE VALLEY VITICULTURAL AREA
LANNY REPLOGLE, WINEMAKER

Style

The chief goal is production of a complex wine with lengthy flavors, mouth fullness, and lingering aftertaste. Replogle wants to become a Semillon champion. He likes the pure varietal and prefers the body to that of Sauvignon Blanc.

Additionally, over the years, the wine has evolved to one with greater percentages of barrel fermentation. The estimated ageing potential is three to five years.

Vineyards

Grapes are sourced from Wente's Figone Vineyard in the Livermore Valley. Vines are 30-years-old, on AXR-1 rootstock, spaced 8x12 in gravelly soil. They are head-pruned at two buds/spur, and a total of 12 to 15 buds/vine.

A sprinkler system delivers ten inches of water through July.

Grapes are harvested at about 23° Brix, 0.6 to 0.85 TA, and 3.3 to 3.43 pH.

Winemaking

Whole-cluster pressing is done. SO_2 at 30ppm is added after crushing. One day after juicing, the must is inoculated with 2-lbs/1,000gal active dry MI-16 yeast. If necessary, acidulation is done before fermentation to lower the pH to 3.3.

About 60% to 70% of the must is barrel fermented at 60° to 70°F in 60-gal two to five-year-old Center of France oak.

After fermentation, the wine remains on the lees in the barrel for eight months. During the barrel regime, free SO_2 levels are kept at 30ppm.

Bentonite is used (0 to 4-lbs/1,000gal) to achieve heat stability.

Before bottling in June following harvest, the wine is blended with 15% Sauvignon Blanc and receives a tight pad filtration, and there is a 0.45*u* membrane at bottling.

At bottling, SO_2 levels are 25ppm free with 0.60 TA and 3.1 to 3.3 pH. The wine is released after six months.

Tasting Notes — 1990 Semillon (15% Sauvignon Blanc)

Color/Aroma: Light yellow. Ripe, light fruit; melon, straw, fig, floral, slight oxidation; delicate and restrained.

Flavors: Heavy, forward oak; high acid, but within limit; hint of fruit rot; full melon and fig; rich, full body.

Balance/Finish: Big upfront, but light aftertaste; good balance.

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VITICULTURAL AREAS
DAVID FORSYTH, WINEMAKER

Style

Emphasizing the melon and fig fruit of the Semillon grape is the principal goal. The Hogue Cellars Semillon has a rich, full mouthfeel without the use of winemaking techniques frequently used to give that richness. These might include barrel fermentation and ageing, malolactic fermentation, and lees contact.

Because of this, Hogue Cellars can produce a modestly-priced wine ($6.50 retail), which has good fruit and varietal definition along with solid structure and mouthfeel. These elements make it compatible with a wide range of food.

The anticipated ageing potential is four to five years.

Vineyards

Grapes were harvested from three different Washington State vineyards, two in the immediate vicinity of the winery (Yakima Valley) and the third situated on the bluffs overlooking the Columbia River in Columbia Valley.

In the last decade, Semillon has become one of many Washington State successes. However, severe winter temperatures may kill fruiting buds, cordons, trunks, and in extreme cases, the vine itself.

Soils have about three feet of silt-loam with fractured basalt below the topsoil. Own-rooted vines, spaced 6x10, average 10 to 14-years-old. Vines are trained on a three-wire T-trellis or a three-wire vertical system with a single fruiting wire. Pruning is done in late winter to 14 to 16 two-bud spurs.

Irrigation consists of both sprinklers and drip. With the sprinkler, two-inch applications are made every two weeks between May 1 and August 30. With drip emitters, 12 hours are applied every third day between May 1 and August 30.

The only canopy management is leaf removal in the post-bloom period (early July). Crop levels average three to five tons/acre.

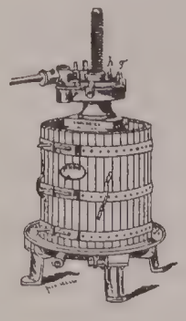
Three mildew-control sprays with Rubigan are made at 12 to 14-inch shoot growth; at bloom, and 18 days later. Insect sprays are made as needed. Typically, one treatment is made in mid-June.

Two 15-lb/acre applications of nitrogen are applied in spring and early June, as required.

Grape flavor is the most significant factor governing harvest, followed by a balance of Brix (22° to 22.5°), TA (0.75 to 0.85), and pH (3.3 to 3.4). Forsyth points out that in 1990, a warmer than average summer was followed by a cooler than usual fall. This led to excellent flavor development along with the appropriate sugar and acid levels in the grapes. The specific harvest parameters were 22.9° Brix, 0.74 TA, and 3.58 pH.

Winemaking

Grapes are harvested mechanically during the night or early morning. In the hopper, 30 to 40ppm SO_2 is added to prevent spontaneous malolactic fermentation. Fruit goes directly to a bladder



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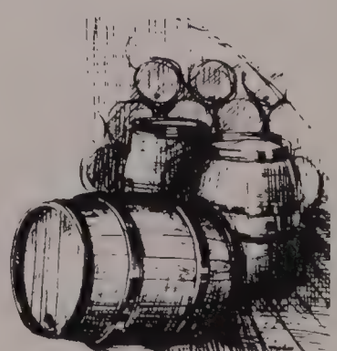

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press without crushing.

If the juice TA is low or pH is high, acidulation with tartaric acid is done prior to fermentation. After fermentation, the wine is tasted for balance and acidulation is done, as necessary, with either tartaric acid or citric acid after lab trials.

After settling 24 hours at 42°F, juice is inoculated with active dry Prise de Mousse yeast at 2-lbs/1,000 gal. Tank fermentation is done at 55°F to 60°F.

Post-fermentation, 40ppm SO_2 is added and then maintained at 0.6 to 0.8 molecular thereafter. The 1990 Semillon received no barrel ageing.

Semillon has not required fining in the past. If coarse or vegetal flavors were present, fining would be considered at ⅛lb/1,000gal Isinglass and SiO2 to improve mouthfeel and clean up flavors.

The wine receives one coarse DE filtration off the bentonite lees followed by a 0.80*u* pad filtration at the end of cold stabilization. A 0.65*u* membrane is ahead of the filler on the bottling line.

Wine is bottled in June or July following harvest with free SO_2 levels at 0.6 molecular and less than 90ppm total. The TA is 0.70 to 0.75 with a pH of 3.25 to 3.35.

The wine is bottle-aged two to three months prior to release.

Tasting Notes — 1990 100% Semillon

Color/Aroma: Light yellow. Shy and closed in; melon, spice, tropical fruit, floral; bouquet develops in the glass; bayberry hints.

Flavors: Crisp, fresh, young; astringent hints; melon, straw; delicious and juicy; refreshing.

Balance/Finish: Balanced acid, fruit and alcohol; food complementary; ageable; rich and flavorful; lengthy.

MITCHELLSTOWN, NAGAMBIE
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Style

The Mitchelton Winery policy is to hold limited quantities of exceptional wines in its cellar for extended bottle ageing. These wines are released at optimum maturity, seven to eight years from vintage.

Since Mitchelton releases only mature Semillon, the aim is a rich, toasty, full-flavored wine, showing developed aroma with subtle oak influence and strong varietal definition. The wine has a typical grassy bouquet with toasty oak overtones. The palate displays a developed herbaceous character in harmony with sweet oak characteristics.

The goal also includes big flavors with a long, lingering finish and an expected ageing potential of 15 years or longer.

Vineyards

The wine is made entirely from Semillon grapes grown at Mitchelton, Mitchellstown, Nagambie, in the Goulburn Valley of central Victoria. Vines planted about 20 years ago are on their own roots, spaced 2m x 3.3m in sandy, clay-loam soil.

They are trained on a quadrilateral cordon and pruned to 20 spurs/cordon in July. The only canopy manipulation is summer trimming. Yields average eight tons/acre.

Overhead sprinklers deliver 20mm of water every two weeks.

Before bunch closure, the typical spray

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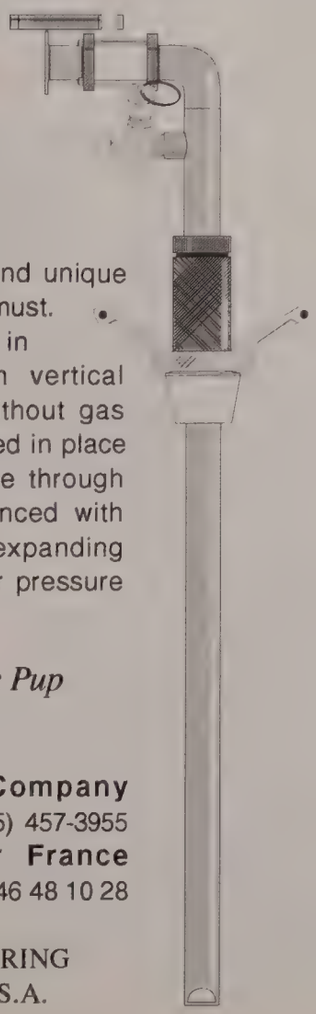

Stainless steel craftmanship and unique design make the Pup a cellar must. Dual o-rings & locking ferrule in the bung unit allow smooth vertical adjustment for lees control without gas leakage. The wand can be locked in place when topping. Monitoring wine through the Pyrex sight glass is enhanced with the optional Pup light. The expanding silicone bung seals tight under pressure without damaging the barrels.

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ROHAPECT® B1L – Increases yields from hard-to-press grapes. See also: Hemicellulase, Scott Labs.

ROHAPECT® D5L – Keeps winery controllers at bay. Increases free run and clarification. See also: Pectinase, Scott Labs.

ROHAPECT® 7104 – Intensifies the varietal aroma of white wines. See also: Glycosidase, Scott Labs.

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program counteracts botrytis, powdery mildew, downy mildew, and phomopsis. After bunch closure, sprays are for powdery and downy mildew. Botrytis is the principal viticultural problem.

Annual cover cropping provides natural fertilization. No chemical fertilizers are used.

Grapes are picked at about 22° Brix with a TA about 0.65 and 3.3 pH. Fruit flavor and vine condition are the principal picking criteria.

Winemaking

In the bins at the harvester, 50ppm SO_2 is added. Destemmed and crushed grapes are pumped through a must chiller at 5°C and held with skin contact in a membrane press for 12 hours prior to draining and pressing. If needed, acidulation is done at the crusher to 8.0 g/L.

After settling for seven days, the wine is inoculated with a 5% culture of active dry Siha-4 yeast. DAP and nutriferm are added as yeast nutrients for barrel fermentation proceeding at 10°C to 12°C. A mix of American and Limousin oak barrels are new and one-year-old.

The wine remains in barrel for 14 months, with free SO_2 levels at 15ppm. Bentonite fining is done for protein stability.

The wine is given a coarse DE filtration after cold stabilization, then it is sterile-filtered in line at bottling.

The wine is bottled soon after with 25ppm free SO_2 and 150ppm total. TA is 0.75 with 3.3 pH.

Tasting Notes — 1985 Classic Release 100% Semillon

Color/Aroma: Medium straw yellow. Fruity, herbal, floral; French oak vanillins tend to dominate fruit; opens to better balance of oak and fruit with time in the glass.

Flavors: Oak first, vanilla following; good acidity; herbal, oaky, heavy oak dominance marries well on palate.

Balance/Finish: Solid, lengthy, rich; all elements pull together; big style.

PWV thanks Clos du Val Winery for hosting the tasting and the following winery representatives for participating on the tasting panel: Val and Dexter Ahlgren, Ahlgren Vineyard; Philip Staley, Alderbrook Vineyards; Krimo Souilah and Gerhard Reisacher, Clos du Val Wine Company; and Lanny Replogle, Fenestra Winery. ■

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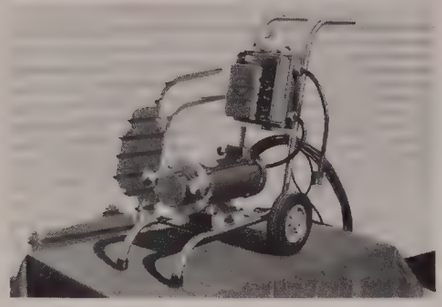

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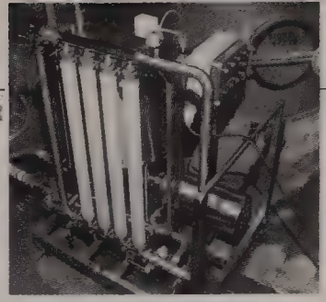
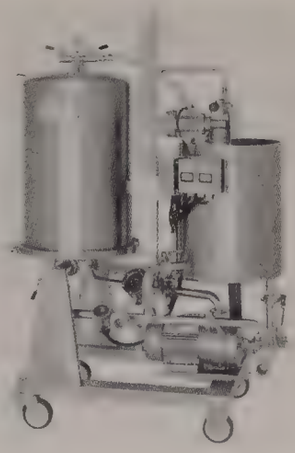
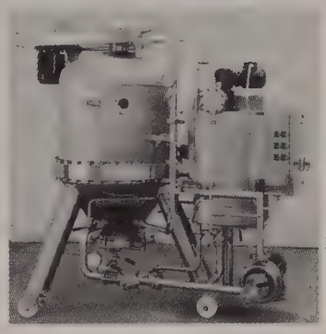


Scott Laboratories

Criveller Company



AWS/PEC



fp Packaging

Filter equipment and media

Criveller Company

Criveller Company represents the Spadoni Company in the North American market. Spadoni is a leading company in filtration equipment. Their production line includes:

Plate filters - D.E. filters - combination filters: lees and wine - rotary disc vacuum filters - cartridge filters and bladder presses.

On the D.E. filters, Spadoni offers two options: horizontal leaf and vertical leaf. The horizontal leaf filter is available in two basic models: manual dry cake discharge, or centrifugal automatic semi-dry cake discharge. Both units are available in various sizes starting from 2 m^2 and up. Several units are successfully working throughout wineries and breweries in North America.

Please call for prices and references. A demonstration unit (4 m^2) is available for immediate delivery at a very competitive price.

The combination filter, wine and lees, is also available at a very competitive price. The basic model includes state-of-the-art piston pump, completely in stainless steel, hydraulic closure of the filtering pack and double inlet and double outlet manifold for wine filtration.

For more information, call **Criveller Company** at 416/357-2930 or 416/358-5202, fax: 416/374-2930. Our U.S. address is PO Box 162, Lewiston, NY 14092. **Please see our ad, page 8.**

fp Packaging, Inc.

fp Packaging represents Padovan/TMCI of Italy, recognized as a leading supplier of clarification equipment to the wine and beverage industries. The Padovan line includes rotary vacuum, pressure leaf, plate and frame, and crossflow filtration equipment.

The Greenfilter series of pressure leaf filters offers the advantages of horizontal screens, centrifugal discharge, and residual liquid filtration at a competitive price. The new ECO-2000 filter offers these same advantages, but is also capable of filtering sparkling wines under pressure and the cake may be dried by gas for extremely dry discharge.

Padovan is among the first to offer flotation clarification technology to the wine and juice industries. Padovan's Flottaflux system uses in-line injection of enzymes and fining agents followed by saturation of the product with gas under pressure. Release of this pressure in a special vessel allows minute bubbles of the gas to attach themselves to solids particles and 'sweep' them to the surface. Solids are removed by a patented vacuum system and clear juice is drawn under a weir system and decanted off. The Flottaflux system is an extremely gentle continuous system which results in lower lees processing requirements when compared to traditional cold settling techniques.

For information please contact: **fp Packaging, Inc.,** 385 Oyster Point Blvd.#3, S.San Francisco, CA 94080, tel: 742-5400, fax 415/871-5950.
Please see our ad on page 21.

KLR Machines, Inc.

KLR represents E. Begerow, German manufacturer of BECO filter sheets and BECOFLOC filter aids. In addition to manufacturing BECO filter sheets to tight tolerances, E. Begerow leads the industry in both raw material quality control and commitment to producing environmentally-safe products. Unique Begerow processing techniques produce filter sheets with expanded internal surface areas, providing superior retention and throughput.

BECOFLOC filter aids are similarly produced to the same quality and environmental standards. An unique milling process permits BECOFLOC filter aids to be added at amounts much less than any other filter aid, while retaining superior suspension characteristics.

KLR offers Strassburger plate and frame, and lees filters, in 40 x 40-cm (15.75 x 15.75-in) and 60 x 60-cm (23.5 x 23.5-in) format.

KLR also represents ROMICON (Koch Membrane Systems) Microporous Crossflow WINEFILTER™ for wine clarification before bottling. The ROMICON WINEFILTER™ eliminates both cost and disposal of D.E. for routine wine filtrations, and reduces filtration steps. This results in less wine loss during clarification.

Coupled with automatic PLC-controlled operation, the ROMICON WINEFILTER™ is easy to use and reduces labor requirements. Practical experience with ROMICON WINEFILTER™ purchased by various California wineries, conclusively demonstrates that the ROMICON WINEFILTER™ maintains wine quality ***without*** adding D.E. or paper taste.

For more information, contact: **KLR Machines, Inc.,** 350 Morris St.#E, Sebastopol, CA 95472, tel: 707/823-2883, fax: 707/823-6954 OR 47 W.Steuben St., Bath, NY 14810, tel: 607/776-4193, fax: 607/776-9044.
Please see our ad, page 11.

Millipore Corporation

Membrane filtration is the premier method of achieving microbiological stability in the bottle.

Since the late 1950's, the suppliers of microporous membrane filters, which retain all yeast and spoilage bacteria, have continued to improve the quality of the materials and the ease of use for the procedures. Current state-of-the-art examples include:

1. Chemically-resistant, non-adsorbent, longer-lasting membrane materials such as polyvinylidenefluoride (PVDF). Future improvements may include metallic and/or ceramic media.

2. Better cartridge construction for longer filter lifetime: most suppliers currently employ all thermoplastic cartridge construction, eliminating thermally-sensitive and chemically-unstable adhesives for seams and end seals. Sonic- or heat-welded seams and polypropylene-potted end caps are now commonplace.

3. Electronic (automatic) integrity testers are available to perform the all-important pre-bottling validation of the membrane's retention rating. These instruments measure and record the diffusion rate and/or bubble-point pressure. A visual or printed display tells a user if the filter meets the supplier's specifications for integrity at the chosen retention rating (such as 0.45 microns). The sometimes difficult and tricky decisions are made independent of human error. The cost of the instruments are decreasing like so many other electronic devices.

Durapore TP® is Millipore's filter cartridge for the wine industry. Supplied in retention ratings of 0.65*u* (for yeast retention) and 0.45*u* (yeast and bacterial retention), Durapore cartridges combine the features of thermoplastic construction, a built-in 'pre-filter', and a tough chemically-resistant fluorocarbon membrane. The benefit is a long lifetime for high throughput volumes and the lowest per gallon filtration costs available.

The Durapore membrane material is PVDF, a close relative of Teflon. The membrane wets easily with water. Durapore is the least color-binding and flavor-binding membrane available to the industry. Red and white wines can be processed interchangeably with only a warm-water rinse in between.

Durapore's thermoplastic construction and chemical resistance permits repeated hot-water sanitation cycles and storage in reducing and oxidizing media, such as metabisulfite, chlorine, or hydrogen peroxide.

Cartridges come supplied in all end-cap styles and lengths from 10 to 40 inches.

Millipore is represented to the California wine industry by Vintners Supply Co. of Ceres, specialists in wine filtration. Vintners can help with hardware, systems, integrity-testing, and the proper choices of prefilters and final membrane cartridges. Vintners Supply are also experts in diatomaceous earth clarifying filtration.

Call Dennis, Janos, or Michelle at 800/366-6809. *In western states outside California, call Millipore direct at* 800/632-2708. *Anywhere in the U.S., Millipore can be reached at* 800/225-1380.

Prospero Equipment Corp./ Associated Winery Systems

Prospero Equipment Corporation (PEC) and Associated Winery Systems (AWS) offer the full line of Della Toffola filters. This includes pad filters from 40 cm^2 with 20 plates, up to 1.2m^2 with 60 plates. For D.E. filtration, the popular two m^2 and three m^2 with manual and automatic dosing are offered.

For larger filtrations volumes, Della Toffola has introduced its new 'NF' line of dry discharge horizontal disk filters. This new design offers many improvements and is available in five to 50m^2 filtration area.

Prospero offers lees filters with the 'UNIVER' total filter system for small wineries. This extremely cost-effective system brings lees filtration in reach of any winery and includes full pad filtration capability as well. The UNIVER is an original Prospero design, based completely on user experience and feedback from wineries all over the U.S. The UNIVER can handle all filtration modes and requirements for a winery on one chassis. It comes complete with a pump and all accessories.

Also available for lees filtration are a complete line of filter presses from 40-cm up to 1.2-m size in any number of plates required. Both electric-driven piston pumps and air diaphragm pumps are available with these filters.

New in 1992 for juice clarification is the flotation filter system that eliminates the use of D.E. and allows pre-fining of the wine. Operation of the flotation filter is continuous with little solid waste.

Filters are in stock, ready for delivery at all times. Complete service is available from trained technicians over the entire U.S. with filter parts stocked in both California and New York.

For more information, contact: **PEC**, 134 Marble Ave., Pleasantville, NY 10570, tel: 800/332-2219; or in California, **AWS**, 7714 Bell Rd., Windsor, CA 95492, tel: 800/ 228-0664.

Please see our ad, page 7.

RLS Equipment Co., Inc.

The Strassburger MicroCross Filtration system is a cross-flow filter designed specifically for use in winemaking. The MicroCross has a hollow fiber module constructed of polysulfon, with each module consisting of bundled fibers with a total filtration surface of 5.0 m^2.

With a new improved fiber, higher operating ranges are obtainable. Each fiber has asymmetric (smaller to larger) .02-micron rated pores which allows for better flow with less clogging or heat build up. The heat generated is less than 2°C during the entire filtration process.

After filtration, cleaning can be accomplished without chlorine or other chemicals that could impart taste.

The filtration modules, in combination with a specialized centrifugal pump and electronic controls, make up the highly effective MicroCross Filtration System.

The MicroCross is available in sizes ranging from two to 32 modules, approximately 200 to 3,200-gph. (Numbers are based on actual production.) Many models have expansion capabilities.

Strassburger also manufactures high quality plate and frame filters (20x20, 40x40, and 60x60), and DE lees filters.

Strassburger asbestos-free filter sheets are available in clarification ratings of 600 to 50,000 liters of water/hour (0.6 to 3.0-micron). Sterilizing, high-performance, and DE sheets (DD are washable, KG for viscous media) are also available.

RLS Equipment has a wide selection of used and brokered filters in various sizes and capacities.

For further information, contact: **RLS Equipment** at 609/965-0074 or 800/ 527-0197 on the West Coast.

Please see our ad, page 30.

Scott Laboratories, Inc.

Scott Laboratories, through 59 years of service to the wine industry, has tried to maintain a position as a leading supplier of filtration equipment, filtration materials, and customer service.

In the recent history of this family-owned company, Scott Labs has been instrumental in introducing the popular lees filters, the versatile Velo pressure-leaf filter sys-

tems, and non-asbestos filter sheets.

What's new?

Velo SpA now produces many sizes of horizontal screen pressure leaf filters to go along with the popular vertical screen design. The horizontal OR-Series is made in an all stainless steel monobloc format.

Velo models F/2, F/3, F/4, and F/5 ($2m^2$ to $5m^2$) are economical versions incorporating butterfly valves and recommended for practical use in wineries with up to 50,000 cases/year volume. Velo models OR5, OR8, OR10, OR15, and OR20 ($5m^2$ to $20m^2$) are horizontal spinning disc (screen) filters for dry cake discharge. These are suggested for use by medium to larger sized wineries.

Velo recently introduced a new continuous system for grape juice solids separation. The Velo Flotation system uses air-incorporated in the juice after pressing, to give continuous separation of suspended solids in a specially designed tank. Juice lees are constantly removed and collected.

In January, 1991, Scott Laboratories began representing SWK Filtration, Inc. (now again called Seitz Filtration, Inc. in the USA). This agreement with Seitz has brought the many quality Seitz filtration products under the sales and customer service of the filtration experts at Scott Laboratories.

Seitz products include the dependable Seitz Supra K-Series filter sheets and other specialty depth filter sheets. This filter sheet media is offered in flat single sheet form, fold-over double sheets, or incorporated in the unique Seitz unified Supra disc modules.

Seitz pre-membrane and final absolute retention-rated membrane cartridges are available.

Scott Laboratories has seen benefits to offer alternative filter aids to diatomaceous earth and is now supplying Harborlite Perlite products along with customer service for the ready incorporation of these filter aids in winery filtration programs.

For more information, contact: **Scott Laboratories, Inc.**, PO Box 4559, Petaluma, CA 94955, tel: 707/765-6666. **Please see our ad, pages 31, 33.** ■

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Celite

Innovation awards given at Intervitis

Individual awards (Plakettes) for technical innovation were given to the following equipment at the 1992 Intervitis Exhibition in Stuttgart, Germany, in June 1992:

AMOS destemmer/crusher

The new AMOS destemmer/crusher has a Double-driving System (ADS). The ADS has two independent variable-speed motors; one to regulate the basket and crushing rollers, the other regulates the stainless steel 'mixing bar'. With this system, the fruit is 'plucked', instead of beaten, from the stems.

The unique rectangular openings in the Hostalen destemming basket permit grapes to pass through with minimal maceration. The gap between the crushing rollers can be adjusted from ⅛-inch to 4-inches in width.

The diversion plate at the inlet permits various destemming/crushing options: destem and crush, crush or destem only, or a mixture of destemmed and whole cluster, crushed or uncrushed. This feed system allows dejuicing at the infeed opening to keep the fruit and destemming basket dry, assisting in more efficient destemming.

The AMOS ADS is available in capacities from 10 to 120 tons/hour.

For further information, contact: **RLS Equipment Co., Inc.**, 609/965-0074 or 800/527-0197 (West Coast).

Bucher RPZ Grape Press

The Bucher RPZ Grape Press has a *Dynamic* pressing concept that has been added to static and manual pressing controls. 'Static' pressing means the press is programmed to operate according to specific, unchanging instructions and the press executes the program exactly, even if there are no grapes in the press.

By contrast, **no** program is specified for *Dynamic* pressing. Both internal and external sensors continuously monitor all critical pressing parameters, instantaneously changing press operation to maximize juice yield at all times. Unnecessary tank rotations and membrane inflations/deflations are eliminated, reducing pressing time and improving juice quality.

For more information, contact: **KLR Machines, Inc.**, 350 Morris St. #E, Sebastopol, CA 95472, tel: 707/823-2883, fax: 707/823-6954 OR 47 W.Steuben St., Bath, NY 14810, tel: 607/776-4193, fax: 607/776-9044.

Clemens dosage unit

Clemens has unveiled a new dosage unit, model CDF-400. This machine, which is very easy to operate, is a round table filler with four dosing heads for automatic suction, dosing, and levelling. The CDF-400 is adjustable, and can handle from 60 to 430 bottles/hour.

The slow motion of the machine, during the dosing process, and the laboratory dispenser assures the correct amount of dosage will be added to each bottle.

For further information, contact: **RLS Equipment Co., Inc.**, 609/965-0074 or 800/527-0197 (West Coast).

Haiges Elektronik GmbH

Haiges Elektronik GmbH was awarded a 1992 Plakette for the introduction of their new Model HDS 03-D density probe. This new probe offers a simple, compact, reliable, and affordable method of fermentation control.

This probe can be fully integrated with the powerful GTX processor system. Two versions are available: a fixed model for installation on a tank wall and a semi-portable system which can be lowered into a tank through existing ports.

The density probe is self-regulating for temperature and pressure, and is unaffected by carbon dioxide. Full integration with the GTX controller offers the winemaker complete control over all of the fermentation parameters. The result is the ultimate retention and development of flavor and aroma elements. The resulting energy savings are an added benefit.

For information, sales, service, and technical support, contact Haiges' exclusive supplier, **Scott Laboratories**, PO Box 4559, Petaluma, CA 94955, tel: 707/765-6666, fax: 707/765-6674.

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VIROIDS in grapevines, a threat or an opportunity?

By J.S. Semancik, J.A.Szychowski, Dept. of Plant Pathology, U.C. Riverside
J.A.Wolpert, Dept. of Viticulture & Enology, U.C. Davis

Introduction

Viroids are a class of small molecules of genetic material that replicate and accumulate in plant cells and possess the ability to produce dramatic biological manifestations (or alterations).

Viroids first became apparent to agricultural scientists as an unusual class of disease-causing agents and have now been found to be an almost universal component of grapevines throught the world.

Viroids are an enigma for grapegrowers and winemakers. Do viroids cause certain grape diseases? Are they agents of vine conditions which have not yet been recognized as 'disease?' Or are they a group of harmless molecular parasites which the vine does not recognize as foreign and consequently cannot reject? Does their presence provide evidence that some selection for particular vine traits has occurred? Do they contribute to the final expression of vine growth, development, and performance, ultimately influencing wine quality?

In the minimal analysis, we must accept the irrefutable fact that virtually every trait describing vine performance and wine quality must be observed and interpreted against a viroid background.

Unusual class of plant pathogenic agents

When compared to other agents of grapevine diseases, such as the Pierce's Disease (PD) bacterium, *Xyella fastidiosa*, and the viruses inducing leafroll and fanleaf disease, grapevine viroids are quite small (Fig.1). They constitute the simplest form of transmissible agents and have been characterized as 'minimal infectious molecules.'

Viroids should not be mistakenly considered as simply 'small viruses.' These sub-viral RNA (ribonucleic acid) molecules are about the size of a single, very small gene. Viroids are not covered by a protein coat as are viruses. It is the protein coat which give viruses their characteristic shape and surface properties.

The protein coats also provide the antigenic determinants by which viruses can be detected and identified with serological techniques, such as ELISA (Enzyme-linked immunosorbent assay). Because viroids lack a protein coat, their presence is confirmed by direct detection of the infecting molecule itself.

Viroids have been found only in plants, and individual viroids are not widely spread across many plant families or species. A viroid is recognized as causing 'disease' only when it comes into contact with a sensitive germplasm which expresses symptoms. Absence of disease symptoms may only indicate that a viroid has not yet come into contact with the sensitive germplasm. (See the citrus example below.)

The physical properties of the viroid-RNA resemble other plant RNA molecules in the cell and therefore the viroid can be synthesized under the direction of host genes. As a consequence, the cell acquires an additional RNA component, the viroid-RNA, which cannot be singled out from host RNA for destruction or inactivation. In fact, the viroid-RNA can compete with and even persist in the cell longer than most host RNA species. This intimate relationship with a host results in the viroid either:

a) inducing a disease or some alteration in growth and development which may be viewed as a 'disease,' (*i.e.*, discrete disease symptoms or reduced vegetative growth) or,

b) being carried within the host cell in a latent or symptomless condition.

Viroids are not disseminated by biological vectors such as insects or nematodes and are spread only infrequently through seed or pollen. However, transmission of viroids is readily achieved by mechanical inoculation.

Thus, the principal route for the spread and persistence of viroids is by vegetative propagation. Propagation practices and extensive worldwide exchange of grapevine materials have provided ideal conditions for promoting the most complete contamination of any single plant group by viroids.

Detection and nomenclature

Several reports of the detection of viroids in grapevines have been presented from laboratories in Japan, Spain, Italy, Australia, and California. Detection of grapevine viroids is principally accomplished using the tools of electrophoresis, whereby nucleic acid extracts are separated in an electric field. Viroids can be observed as discrete bands (Fig.2) following sequential polyacrylamide gel electrophoresis (sPAGE).

Molecular hybridization provides more specific identification. Viroids are 'matched' against molecular probes that are synthesized, using the viroid as a template. The viroid's ultimate physical characterization is derived from the

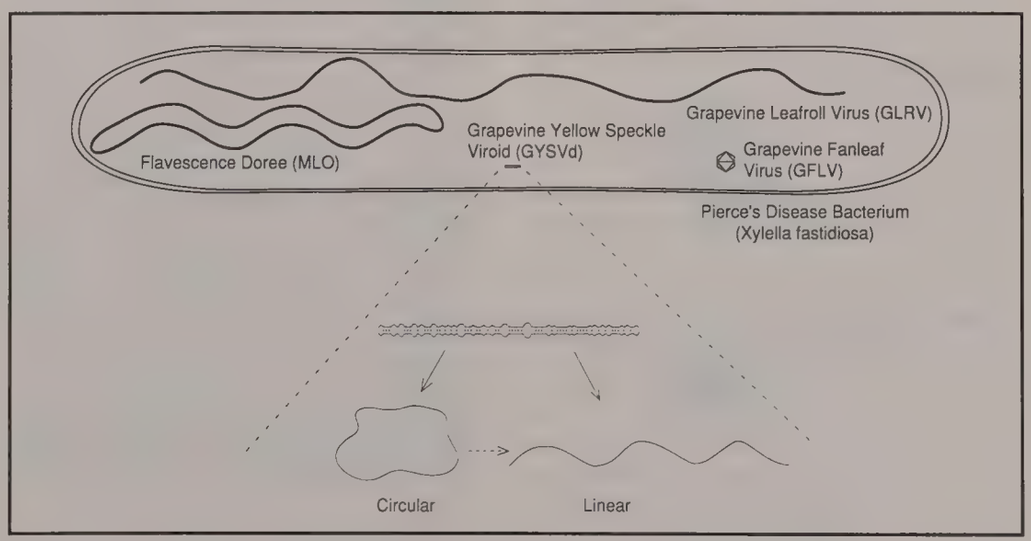

Fig. 1. A comparative diagramatic representation of the relative sizes of the grapevine yellow speckle viroid (GYSVd) with other grapevine pathogens including Pierce's Disease (PD) bacterium *Xylella fastidiosa*, Flavesence Doree mycoplasma-like organism (MLO), leafroll-associated virus (GLRV), and fanleaf virus (GFLV).

nucleotide sequence, or the genetic essence of the viroid.

The descriptions of the physical and biological properties of some viroid species are suggestive of similar or identical molecular forms. However, the different nomenclature attributed to grapevine viroids has created the illusion of a larger number of viroids than probably exists.

With the active worldwide exchange of vegetatively-propagated grapevine materials, it is also reasonable to suspect a commonality among the grapevine viroids identified as distinct agents in different locations. This view is supported by studies indicating a high degree of relatedness among viroids isolated from

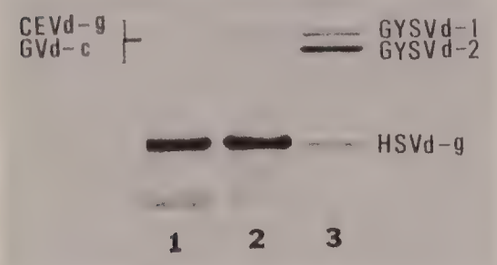

Fig. 2. Viroid bands visualized by silver staining of a gel following sequential polyacrylamide gel electrophoresis (sPAGE). The three major viroid profiles found in grapevines are displayed as 1) HSVd-g, 2) GYSVd-1 + HSVd-g, and 3) GYSVd-1 + GYSVd-2 + HSVd-g.

TABLE I
A CONSENSUS NOMENCLATURE FOR THE GRAPEVINE VIROIDS

GROUP	GRAPEVINE VIROID	SYNONYMOUS DESIGNATIONS	NUCLEOTIDE SEQUENCE	DISEASE
1	CEVd-g	GVd-s	369	(NR)*
2	GVd-c ACVd	GVd-c AGVd	(NR) 369	(NR) (NR)
3	GYSVd-1 GYSVd-2	GVD-f,GVd-1, GVSVd GVd-2, GVd-1B	367 363	Yellow Speckle Yellow Speckle
4	HSVd-g	HSVd-g (Riesling), GVd-3 HSV-g (Japan), GVd-3	298 297	(NR) (NR)

*(NR) = no report

TABLE II
PATTERNS OF DISTRIBUTION OF VIROIDS IN GRAPEVINES FROM CALIFORNIA AND EUROPE

			Numbers of Varieties Analyzed			
GYSVd-1	GYSVd-2	HSVd-g	Wine	Rootstock	Table	Total
-	-	+	7	8	4	19
+	-	+	68	16	15	99
-	+	+	0	2	0	2
+	+	+	5	1	10	16
-	-	-	0	1	0	1
*+	-	-				
*-	+	-				
*+	+	-				
* Possible viroid combinations which have never been detected.						

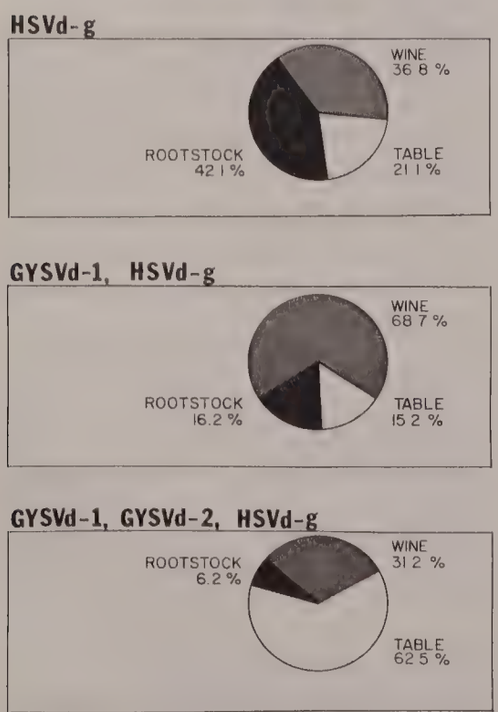

Fig. 3. Representation of the distribution of the three major viroid profiles in cultivars classified principally as wine, table, or rootstock varieties.

sources in California and Europe.

A proposal for the organization of the grapevine viroids with similar properties into four specific groups is presented in Table I. This organizational scheme has been accepted by the International Council for the Study of Viruses and Virus Diseases of the Grapevine (ICVG).

Unusual properties and associations involving the grapevine viroids

Although the viroids detected from grapevines share the typical physical characteristics of this unusual group of plant pathogens, some biological properties and associations with grapevines are noteworthy:

a) Virtually all grapevines contain viroids.

b) Two viroids (**GYSVd-1** and **HSVd-g**) are widespread in wine cultivars.

c) A third viroid (**GYSVd-2**) is most common in table grape varieties.

d) No alternate hosts are known for **GYSVd-1** and **GYSVd-2**.

Through the analysis of viroids in varieties from California and Europe, five patterns of distribution have emerged (Table II). The vast majority (97%) of the tested varieties display one of three basic patterns, 1) HSVd-g alone, 2) HSVd-g + GYSVd-1 or 3) HSVd-g + GYSVd-1 + GYSVd-2.

When the frequency of these three patterns is viewed against the grouping of vines as wine, table, or rootstock cultivars, a distinct profile for the predominant class is evident (Fig.3). From this, we can conclude that grapevine viroids are apparently not generally present throughout all vine materials. Furthermore, three of the possible combinations of the viroids have never been detected. This indicates that natural spread of viroids in grapevines has neither been frequent nor totally random.

The simplest conclusion to explain this fact is that viroids have been introduced into vines as a result of cultural practices and usage patterns. A more speculative consideration is whether the presence of viroids was accomplished through the unconscious effort to retain some desirable vine trait.

Relationships of viroids to grapevine diseases

When considering reasons for the persistence and biological activity of viroids in grapevines, the most immediate explanation would be the implication of viroids as disease-causing agents. Viroids are known to cause certain diseases. However, with the widespread occurrence of viroids throughout healthy appearing grapevines, it would seem that the viroids are not directly involved in any major problem of vines.

Nevertheless, two grapevine viroids, GYSVd-1 and GYSVd-2, have been implicated as the causal agents of **yellow speckle disease**. Fig. I indicates that about 85% of the 137 varieties analyzed carried one of the causal agents of the yellow speckle disease. Characteristic foliar symptoms of this disease are presented in Fig.4 (left). This disease is not common in California or Europe, but does appear late in the season in warmer Mediterranean areas and it is especially pronounced in Australia, where the expression of yellow speckle symptoms may be favored by those specific climatic conditions. High temperatures generally promote the expression of viroid infection.

It has also been proposed that when viroids inducing yellow speckle disease are found in association with fanleaf disease, classical vein banding symptoms occur (Fig.4, right). This unique interaction between the viroid and virus has not, as yet, been confirmed by experimental testing.

It is important here to re-emphasize the statement made earlier that, in general, a viroid may affect a limited number of plant species and only certain groups of genotypes. The introduction of new and diverse rootstock materials may hasten the discovery of these sensitive germplasms. The effect of a viroid may not simply be expressed in some very apparent foliar or fruit symptom, but also in more subtle expressions such as reduced vigor, graft incompatibilities, and bud-union disorders, or even synergistic reactions with other diseases.

Although no evidence currently exists implicating CEVd-g and HSVd-g in grapevine disease, both viroids have been shown to induce severe symptoms of stunting in citrus and cucumber, respectively (Fig.5). Therefore, CEVd-g and HSVd-g are not only transmissible, but also potentially infectious.

From an academic and practical perspective, it seems prudent to accept the premise that any transmissible biological agent carried within a plant cell probably effects some change in the basic biology of that plant. The extent to which we are aware of that 'induced alteration' is dependent on our observational skills and the limits of detections. Applying this principal to viticulture and enology becomes even more difficult in that unobservable changes in the basic metabolism of the vine may be translated into metabolic products that could affect wine quality.

Production of viroid-free vines

To test for the effects of grapevine viroids, it is essential to generate true-to-type, viroid-free vines as comparative controls for field trials. Viroids cannot be eliminated from plant tissues by heat treatment. In fact, the replication and accumulation of viroids is favored by high temperature. The production of viroid-free materials has been the result of a collaborative effort with the laboratory of Dra. Nuria Duran-Vila, IVIA, Valencia, Spain.

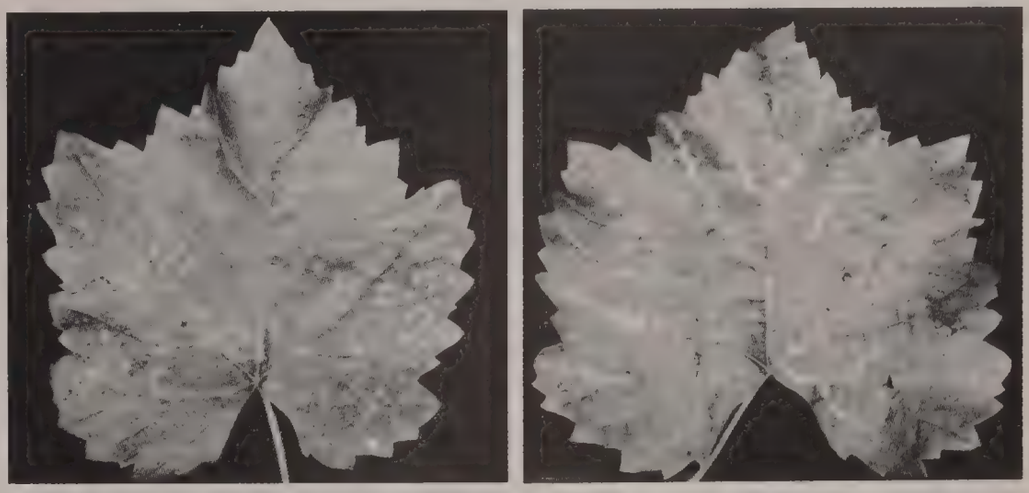

Fig. 4. Yellow speckle disease symptoms induced by grapevine yellow speckle viroid (GYSVd) (left) and vein banding disease symptoms (right) reported to be expressed by GYSVd in the presence of fanleaf disease.
Photographs kindly supplied by Dr. Rino Credi.

Fig. 5. Growth alterations induced in a cucumber plant induced by HSVd-g (left) with viroid-free control (right). The general dwarfing results from internode shortening and reduced vegetative vigor.

Viroid-free tissues of Cabernet Sauvignon and other varieties were generated from very small (0.15mm) shoot tips by *in vitro* culturing. The purpose of the experiment was to confirm not only the causal agents of yellow speckle disease and vein banding symptoms, but to describe the effects grapevine viroids induce on vine performance and wine quality. Since the viroid-free vines are also probably free of all other grapevine disease, the testing of vines for all direct influences of viroids is now a reasonable expectation.

In spite of the demonstration of transmission and infectivity of grapevine viroids, no definitive evidence currently exists for the frequency of spread in a commercial field planting. A field trial comprised of viroid-free vines interplanted with viroid-containing vines has indicated no field spread over a four-year period of exposure to normal cultural practices. In a related observation, vines of the same variety growing adjacent to the viroid-infected vines for over 20 years would display different viroid profiles.

Field trials of viroid-free vines and test wines

With the production of viroid-free Cabernet Sauvignon vines, the first field trials in the world of viroid-free materials has been initiated in the Napa Valley at the Oakville Experiment Station of the University of California. A comparison trial of the following treatments was planted in 1988:

1) viroid-free vines,

2) propagations of viroid-free vines with grapevine viroids reintroduced,

3) parental source vines.

Vines were spaced 8-ft. x 12-ft, (vine x row) and trained to a bilateral cordon. The trellis is a 'T'-system with one fruiting wire and two foliage catch wires. Supplemental irrigation is provided by a drip system. Standard vine performance parameters to be measured include per-vine measurements of pruning weight, crop weight, and cluster number.

A berry sample at harvest will provide measurements of average berry weight and juice maturity indices of °Brix, titratable acidity, and pH. Test wines will be made from all three treatments and subjected to both chemical and sensory analyses.

The first test wines from the Cabernet Sauvignon test vines at Oakville were made with the small 1991 harvest from the young vines to provide a basis for comparison of wines produced from future harvests.

This initial test of self-rooted vines will be enlarged to include vines on Teleki 5C when viroid-free rootstock materials become available. An invitation was received from the INRA Station in Bordeaux to duplicate this trial and materials are currently being prepared for planting in France.

Additional viroid-free materials in various stages of production include: Sauvignon blanc, Chardonnay, Merlot, Malbec, Cabernet franc, Pinot noir, and Zinfandel. Current plans are to include additional varietals in the Oakville Viroid Trial, depending on resources and continuing interest.

Citrus exocortis viroid —a plant pathogen and a 'growth regulator'

From a historical perspective, a scenario from another commercial crop can be instructive. Early in the development of the citrus industry, viroids were carried harmlessly in productive sweet orange seedlings, as well as sweet orange scions on sour orange rootstock. However, when trifoliate orange rootstocks replaced sour orange, the combination of new rootstock germplasm with the previously harmless viroids resulted in a high incidence of severe bark shelling, pitting, and general tree decline.

Later, it was observed that, in hybrid rootstocks developed from the sensitive trifoliate germplasm, citrus viroids induced a far less severe reaction. The mild bark cracking symptom was accompanied only by a moderate reduction in tree size. The introduction of citrus viroids as 'dwarfing agents' is already in commercial application in Israel.

Perspectives for the control and potential application of viroids

With the detection of grapevine viroids and widespread dissemination throughout the crop, questions arise which pose concerns for future developments in the grapevine industry. A listing and brief commentary of some of these topics follows.

1) Are viroids implicated in grapevine disease?

The presence of viroids does not appear to be linked to any major problem in grapevine culture. This statement must be qualified with the understanding that until very recently, no viroid-free vines were available to provide the critical controls necessary to determine the effects of viroids. Under favorable environmental conditions, only minor yield losses have been attributed to the viroid-induced disease yellow speckle.

2) What is the current impact of viroids on vine productivity and wine quality?

A correlation between viroid profiles and clonal selections of Cabernet Sauvignon is summarized in Table III.

TABLE III

OCCURRENCE AND RELATIVE CONCENTRATION OF VIROIDS IN CLONAL SELECTIONS OF CABERNET SAUVIGNON

Selection	GYSVd-1*	HSVd-g
1	-	++++
2	+	++++
3	+	++
4	++	+
5	++	++
6	++++	++

* Increasing quantity of viroid is indicated by + to ++++.

When viroid analysis was performed on a field test of six clonal selections in a commercial vineyard, divergent patterns of viroids were obtained. It is most unusual for plant selections of an identical germplasm to react so differently to the replication of a viroid.

Thus, the viroid patterns might be taken as an indicator of differences that exist in the clonal selections. It can only be conjectured whether or not the effects induced by the viroids actually contributed to the traits which were employed as parameters for selection and discrimination of the clones.

TABLE IV

VIROID PROFILE CONTAINED IN ROOTSTOCK GERMPLASM SPECIES

A) HSVd-g, GYSVd-1, GYSVd-2
V. amurensis, V.girdiana, V. riparia

B) HSVd-g and GYSVd-1
V. champini, V. doaniana, V. flexuosa, V. girdiana, V. riparia, V. rotundifolia, V. solonis

C) HSVd-g
V. riparia, V. rupestris, V. rupestris var. St. George

D) No Viroid
V. californica

3) Are there specific grapevine germplasm sources sensitive to viroids?

No experimental data adressing this specific reaction exists. Our information and experience with other crops would predict a high probability that sensitive species do exist. It is also highly possible that the vinifera cultivars carry the viroids in a symptomless condition as is the case with other grafted crops.

Of greatest present concern is the possibility of a reaction of a rootstock to the viroids. This reaction might take the form of a graft incompatibility, bud-union disorder, or even reduced success rate of grafting. Interactions of viroids with soil-borne pathogens should also be considered. A logical step to take would be to test a wide range of species used in rootstock breeding; their viroid profiles may eventually help to explain any unexplained disorders they exhibit.

To this end, a number of germplasm sources have been analyzed for viroid content and an unexpectedly wide range of viroid profiles have been detected. (Table IV).

4) Is a program for the certification of viroid-free vines needed?

Some consideration should be given to the identification and preservation of viroid-free materials. A substantial investment has been made in the production and propagation of these vines. From the statement made at the outset of this report, "... every trait describing vine performance and wine quality must be observed and interpreted against a viroid background," it would seem that the viroid-free vines should have a broad importance to grapevine research beyond simply that of the effects of viroids.

5) Is a regulatory policy needed to monitor the exchange of grapevine materials containing viroids?

Practically speaking, virtually all grapevines contain viroids. Therefore, there does not appear to be an urgency to presently mandate any additional regulatory practices governing the movement of grapevines.

Nevertheless, there should be a realization that about 85% of the vines in the industry already carry one of the agents of the yellow speckle disease.

6) Do viroids offer an opportunity to customize vine growth and development?

The era of biological micro-management of plant growth and development is here. The question remains whether this goal is to be accomplished solely by introducing foreign genetic information by biotechnology, or by alternative approaches.

The viroids, taken as a collection of naturally-occurring transmissible molecules with the ability to effect modifications in plants, exhibit the potential for *'biological engineering'* or customizing some aspect of plant growth. The most common symptom expression of viroid infection in a number of plant species is 'stunting' as displayed with the inoculation of HSVd-g to cucumber in Fig.5.

Is a 'dwarfed' plant a 'diseased' plant? The reply could be, "not if the fruit retains a marketable quality while plant management costs are reduced." Might this same principal not also be applied in the grapevine industry to a goal such as reducing the vigor of Sauvignon blanc?

Acknowledgments

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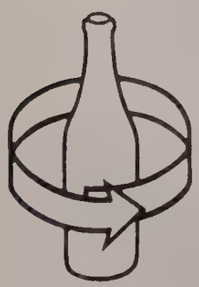

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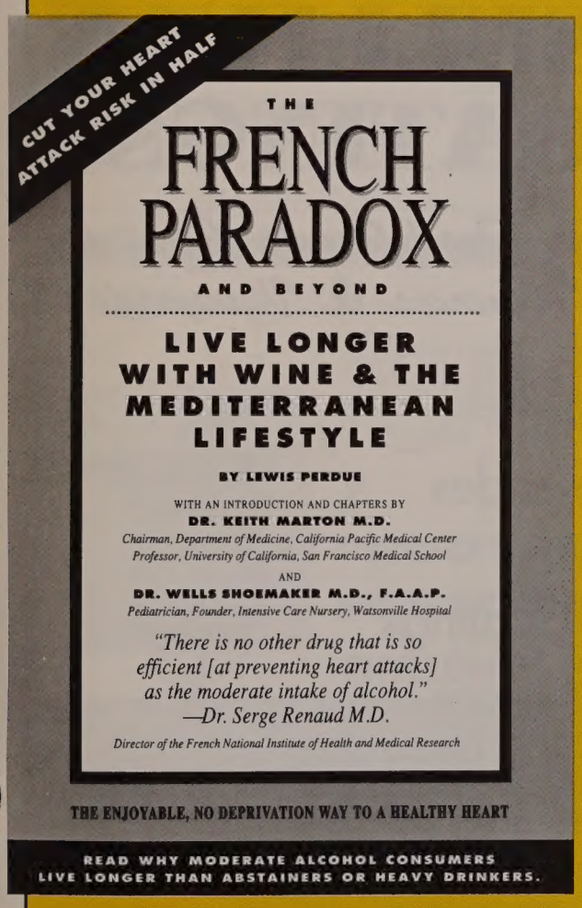
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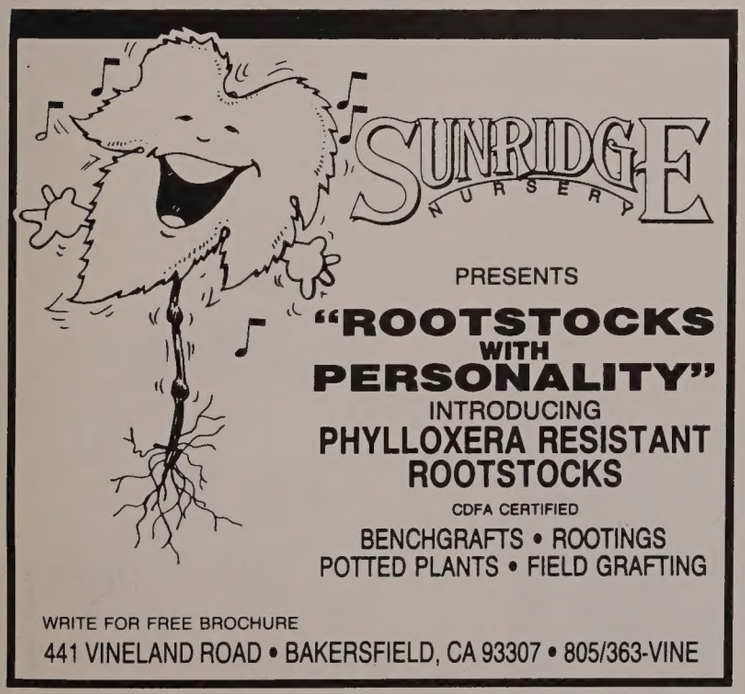

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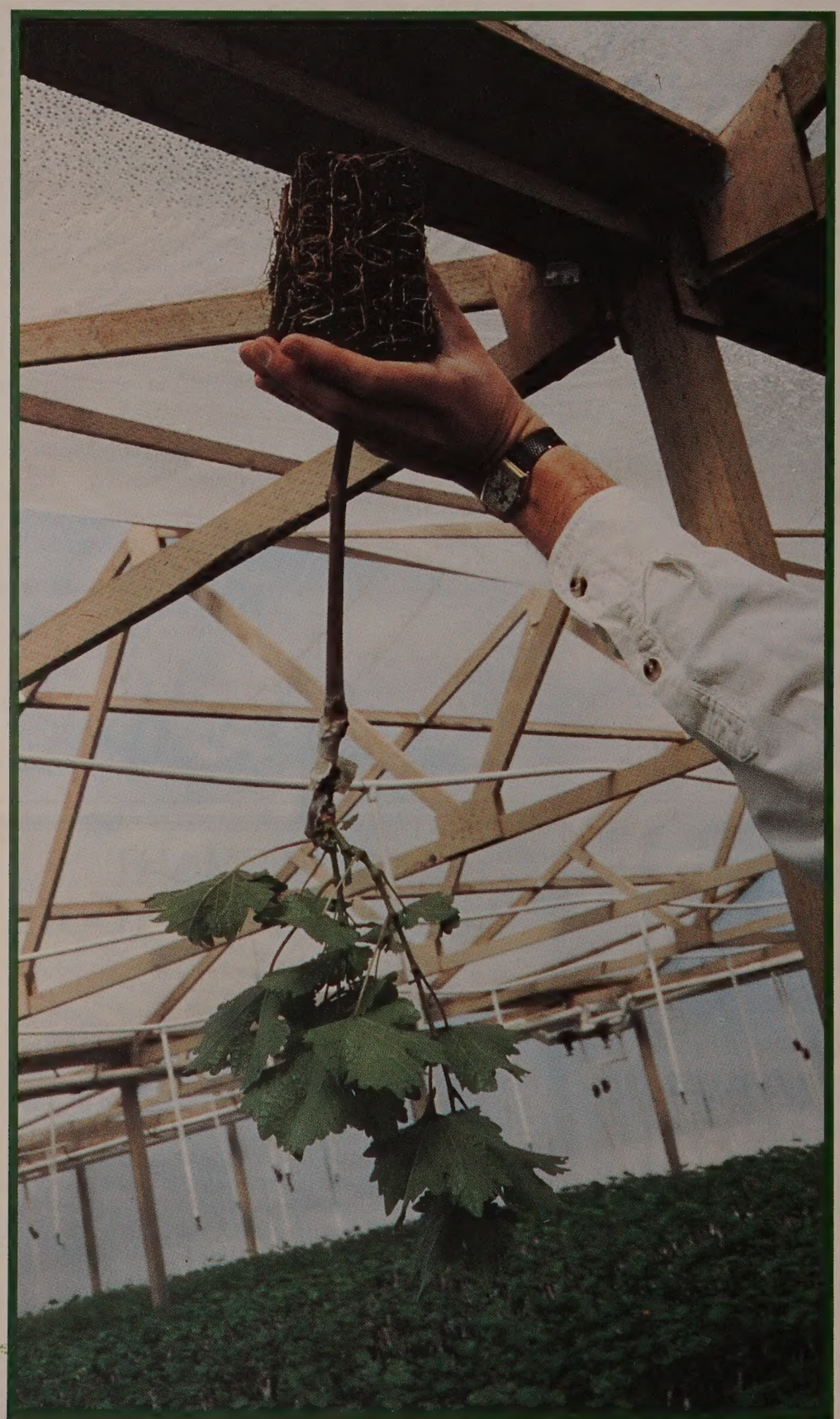

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